ONKYO SERVICE MANUAL

REF. NO. 3426

AUDIO VIDEO CONTROL TUNER AMPLIFIER
MODEL TX-SV909PRO

Black model

BHUD, BHUDN	120V AC, 60 Hz
BHUG	220V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO®
AUDIO COMPONENTS

TABLE OF CONTENTS

SPECIFICATIONS

AMPLIFIER SECTION

Power output: Stereo mode
Front L/R channels
110 watts per channel min. RMS. at 8 ohms, both channels driven, from 20Hz to 20,000Hz, with no more than 0.04% total harmonic distortion.
Surround mode
Center channel
110 watts min. RMS. at 8 ohms 1.000Hz, with no more than 0.08% total harmonic distortion.
Rear channels, Front Enhance/ Remote channels 30 watts per channel min. RMS. at 8 ohms 1,000Hz with no more than 0.08% total harmonic distortion.

IM distortion:	0.04% at rated power (FRONT)
Damping factor:	70 at 8 ohms (FRONT)
Sensitivity and impedance:	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/2.2 kohms Pre out (FRONT): 1V, 2.2 kohms Pre out (REAR/CENTER/FRONT/ ENHANCE: 1V, 2.2 kohms Mono out (SUB WOOFER): 1V, 2.2 kohms
Phono overload:	120mV RMS. at 1,000 Hz, 0.5 % THD.
Frequency response:	20 to 30,000 Hz, +/–1 dB VIDEO IN → DOLBY PRO LOGIC SURROUND → REAR PRE OUT : 30 to 7 kHz, +0 dB, –3 dB
RIAA deviation:	20 to 20,000 Hz, +/–0.8 dB
Tone control:	BASS: +/–10 dB at 100 Hz
(Front L/R, center)	TREBLE: +/–10 dB at 10.000 Hz
Signal-to-Noise ratio:	PHONO: 80 dB (IHF A, 5mV input)
(SURROUND MODE: OFF)	CD/TAPE: 100 dB (IHF A)
Muting:	–∞dB

VIDEO SECTION

Sensitivity and Impedance:

VIDEO 1 – 6 (IN) VIDEO
input: 1Vp-p, 75 ohms
VIDEO 1 – 3 (OUT), MONITOR OUT VIDEO
output: 1 Vp-p, 75 ohms
input: Y signal 1 Vp-p,75 ohms
C signal 0.28 Vp-p, 75 ohms
VIDEO1 – 3 (OUT), MONITOR OUT S-VIDEO
output: Y signal 1 Vp-p, 75 ohms
C signal 0.28 Vp-p, 75 ohms

TUNER SECTION FM:

Tuning range:	87.50 – 108.00 MHz (50 kHz steps)
Usable sensitivity:	Mono: 11.2 dBf, 1.0 µV (75 ohms) Stereo: 17.2 dBf, 2.0 µV (75 ohms)
50 dB quieting sensitivity:	Mono: 17.2 dBf, 2.0 µV (75 ohms) Stereo: 37.2 dBf, 20 µV (75 ohms)
Capture ratio:	1.5 dB
Image rejection ratio:	80 dB
IF rejection ratio:	90 dB
Signal-to-Noise ratio:	Mono: 76 dB Stereo: 70 dB
Alternate channel Attenuation:	55 dB
AM suppression ratio:	50 dB
Harmonic distortion:	Mono: 0.1% Stereo: 0.2%
Frequency response:	30 – 15,000 Hz ± 1.0 dB
Stereo separation:	45 dB at 1kHz 30 dB at 100 – 10,000 Hz
Muting level:	17.2 dBf

AM:

Tuning range:	530 – 1710 kHz (10 kHz steps) 522 – 1611 kHz (9kHz steps)
Usable sensitivity:	30 µV
Image rejection ratio:	40 dB
IF rejection ratio:	40 dB
Signal-to-Noise ratio:	40 dB
Harmonic distortion:	0.7%

GENERAL

Power supply: USA and Canadian models
AC120V, 60Hz

Dimensions (W x H x D):	455 x 190 x 425 mm 17-15/16 " x 7-7/16" x 16-11/16"
Weight:	22 kg., 48.5 lbs.

REMOTE CONTROL TRANSMITTER RC-230M

Transmitter:	Infrared
Signal range:	Approx. 5 meters (16ft.4")
Power supply:	Four "AA" batteries (1.5V x 4)

Specifications and features are subject to change without notice.

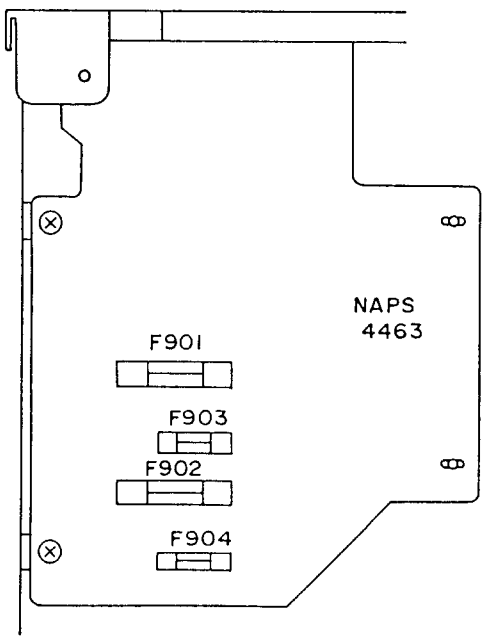
SERVICE PROCEDURES

1. Replacing the fuses

For continued protection against fire hazard,replace only with same type and same rating fuse.

Circuit No.	Part No.	Description
F901	252053	⚠ 8A(ST-6),Primary fuse <D>
F902	252049	⚠ 4A(ST-6),Primary fuse <D>
F903	252077	⚠ 4A-SE-EAK,Primary fuse <G>
F904	252074	⚠ 2A-SE-EAK,Primary fuse <G>

NOTE:<D>:120V model only
<G>:220V model only



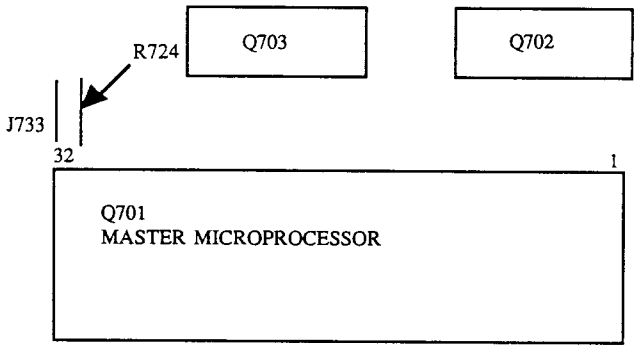
2. Change of AM band step

This model is not provided a band step selector switch.

(AM)

Band Step	R724
10 kHz→9 kHz	Addition
9 kHz→10 kHz	Removement

In Carbon Resistor R724 10 kΩ (Part No. 417341034) is used.



MASTER MICROPROCESSOR CIRCUIT PC BOARD

3. Memory preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

4. Safety-check out

(Only U.S.A. model)

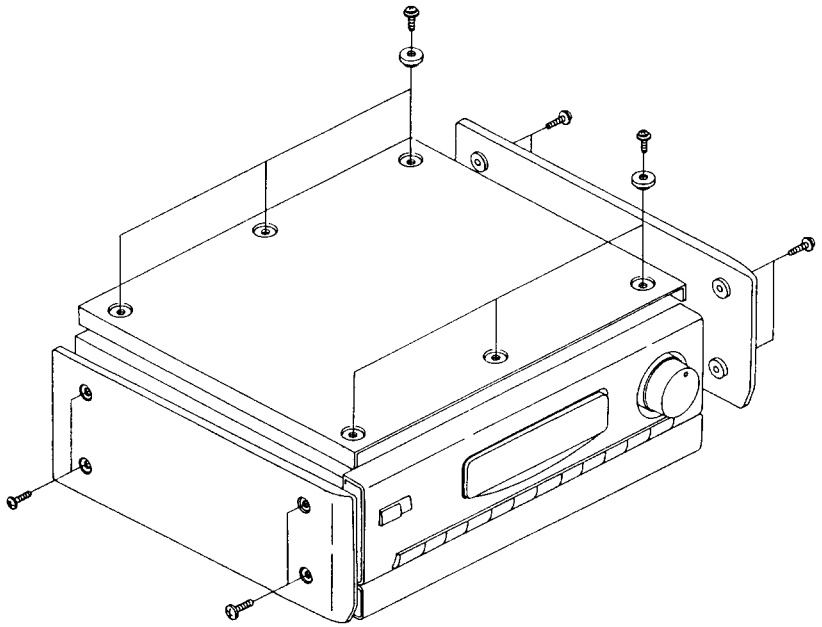
After correcting the original service problem perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power supply cord and terminal GND on the back panel. Specifications: 3.3 Mohm ±10% at 500V.

DISASSEMBLING PROCEDURES

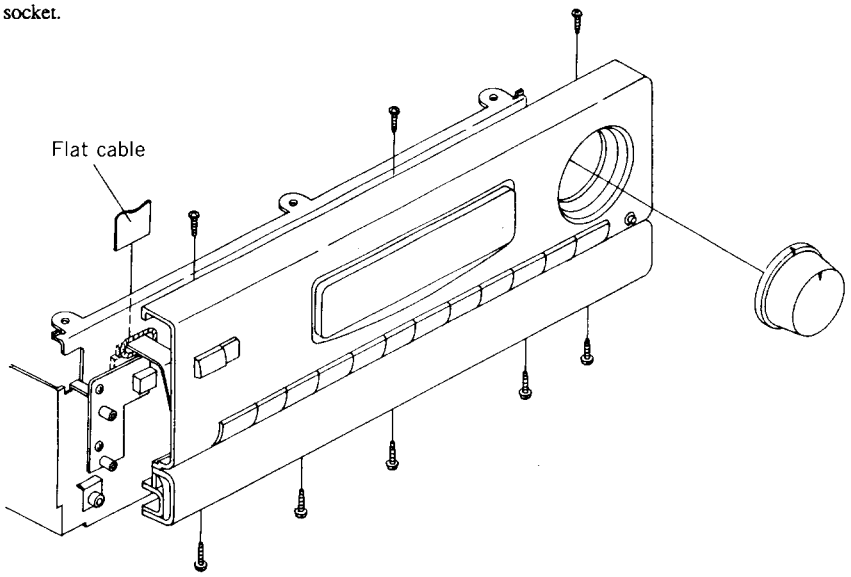
1. Top Cover

Remove the eight screws holding the side panels and the chassis.
Remove the six screws holding the top cover and chassis.



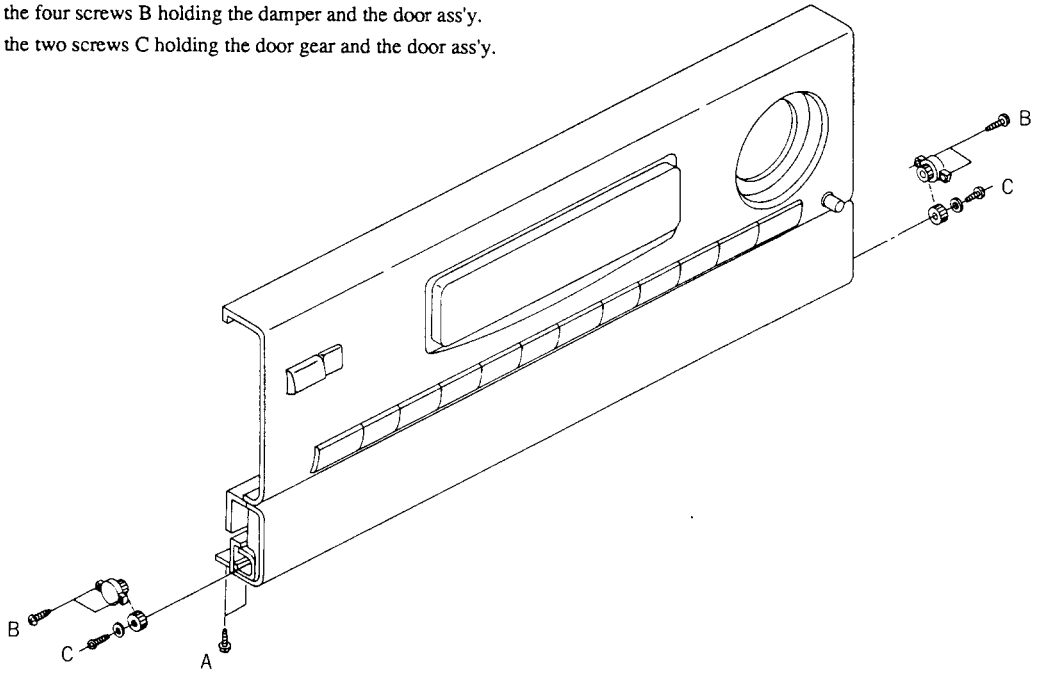
2. Front Panel

Remove the top cover.
Remove the volume knob.
Remove the eight screws holding the front panel and the front bracket.
Remove the flat cable from the socket.



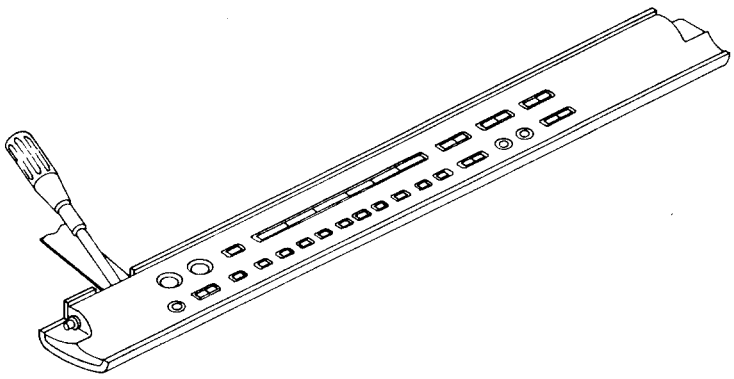
3. Door ass'y

Remove the front panel.
Remove the two screws A.
Remove the four screws B holding the damper and the door ass'y.
Remove the two screws C holding the door gear and the door ass'y.



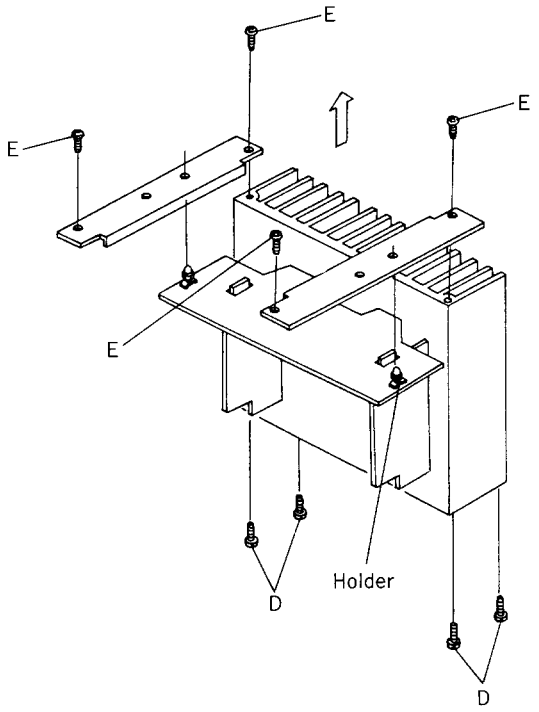
4. Operation switch pc board check

Insert the screwdriver (-) between the door panel and the door as shown below.
Lift up the door panel and remove the door panel.



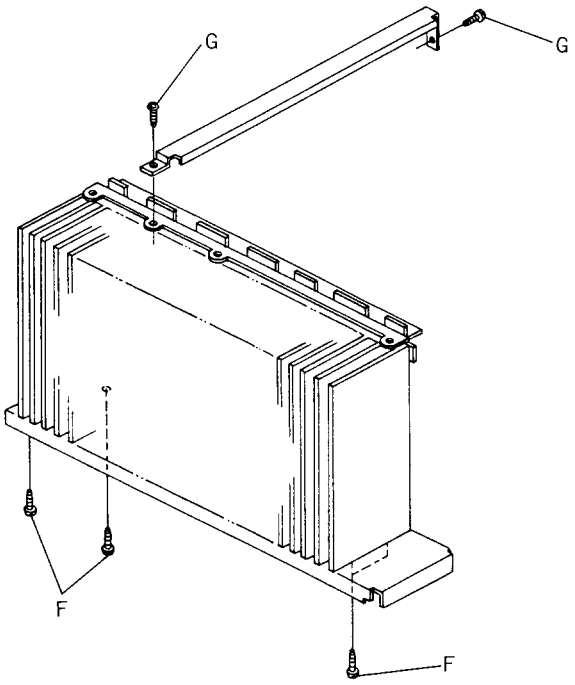
5. Front enhance, multi source, and power amplifier pc board check

Remove the top cover and the bottom board.
Remove the four screws D from the bottom side.
Remove the four screws E.
Remove the two brackets from the holders.
Lift up the radiator to the arrow mark as shown below.

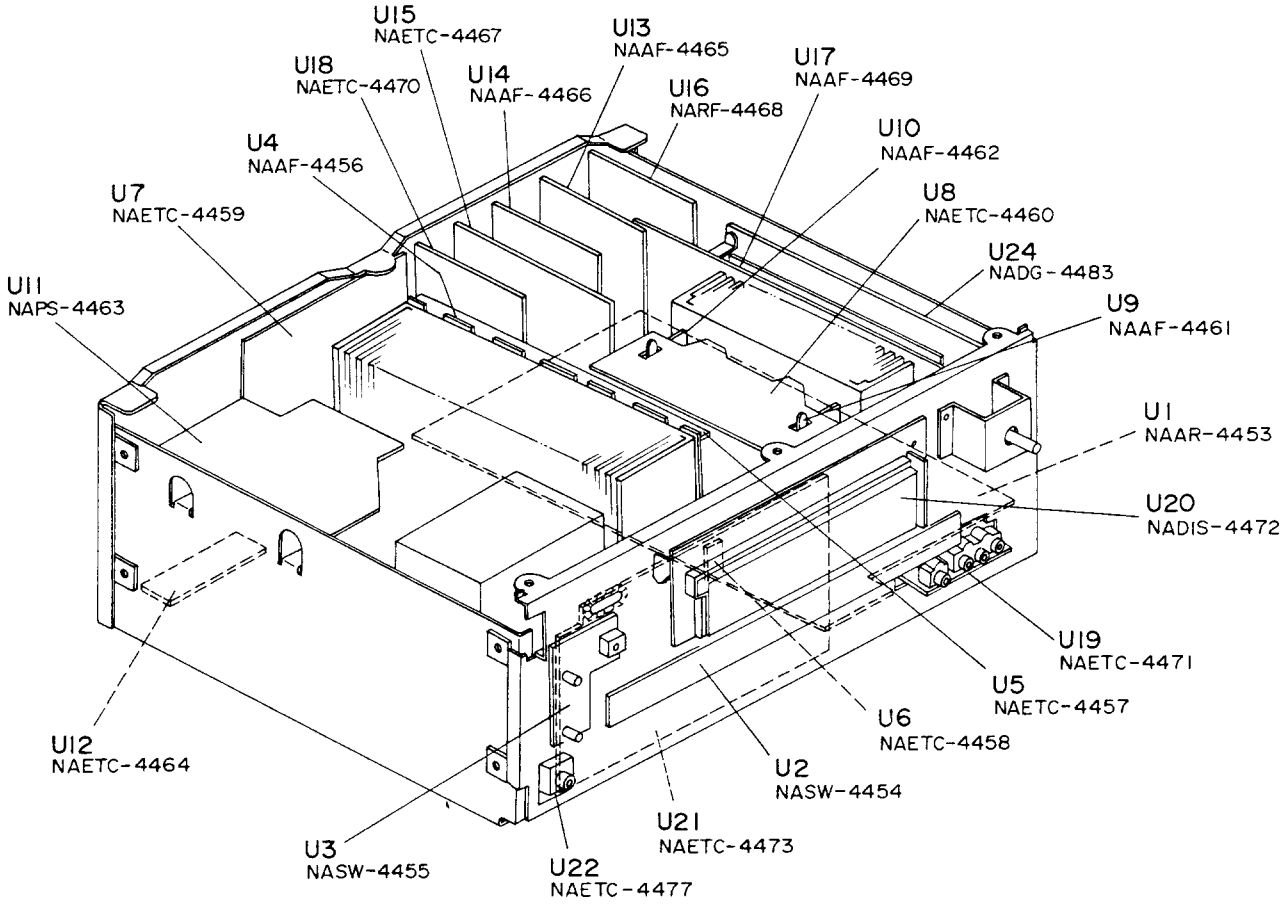


6. Front and center power amplifier pc board check

Remove the front enhance,multi source,and rear power amplifier pc board.
Remove the four screws F from the bottom side.
Remove the two screws G.



PRINTED CIRCUIT BOARD LOCATION VIEWS



U1 MASTER MICROPROCESSOR CIRCUIT PC BOARD(NAAR-4453-1)... PART 1
U2 SELECTOR SWITCH PC BOARD(NASW-4454-1).....PART 2
U3 REMOTE CONTROL SENSOR PC BOARD(NASW-4455-1)....PART 2
U4 FRONT AND CENTER POWER AMPLIFIER PC BOARD(NAAF-4456-1)....PART 7
U5 POWER TRANSISTOR PC BOARD(NAETC-4457-1).....PART 7
U6 RECTIFIER PC BOARD(NAETC-4458-1).....PART 7
U7 SPEAKER TERMINAL PC BOARD(NAETC-4459-1).....PART 7
U8 POWER SUPPLY CIRCUIT PC BOARD(NAETC-4460-1).....PART 4
U9 REAR POWER AMPLIFIER PC BOARD(NAAF-4461-1).....PART 4
U10 FRONT ENHANCE/MULTI SOURCE POWER AMPLIFIER PC BOARD
(NAAF-4462-1).....PART 4
U11 POWER SUPPLY CIRCUIT PC BOARD(NAPS-4463-1).....PART 4
U12 AC OUTLET PC BOARD(NAETC-4464-1).....PART 4
U13 SELECTOR CIRCUIT PC BOARD(NAAF-4465-1).....PART 5
U14 AUDIO SELECTOR PC BOARD(NAAF-4466-1).....PART 5
U15 VIDEO COMPOSITE AND DISPLAY CIRCUIT PC BOARD
(NAETC-4467-1) .....PART 8
U16 TUNER CIRCUIT PC BOARD(NARF-4468-1)....PART 2
U17 BALANCE AND VOLUME CIRCUIT PC BOARD(NAAF-4469-1).....PART 6
U18 VIDEO SELECTOR PC BOARD(NAETC-4470-1).....PART 8
U19 INPUT TERMINAL PC BOARD(NAETC-4471-1).....PART 5
U20 DISPLAY CIRCUIT PC BOARD(NADIS-4472-1).....PART 2
U21 POWER SUPPLY CIRCUIR PC BOARD(NAETC-4473-1).....PART 4
U22 HEADPHONE TERMINAL PC BOARD(NAETC-4474-1).....PART 7
U23 OPERATION SWITCH PC BOARD(NASW-4475-1)....PART 2
U24 DSP CIRCUIT PC BOARD(NADG-4483-1).....PART 3

ADJUSTMENT PROCEDURES

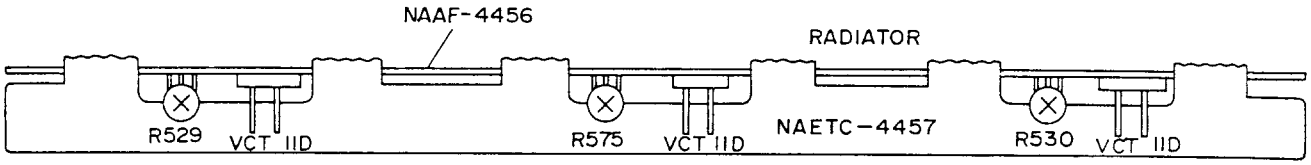
• Preparation

1. Input
   FM mono: 1kHz, 75kHz devi., 60dB/μV
   FM stereo: 1kHz, L+R 67.5kHz devi.,
   Pilot signal 19kHz 7.5kHz devi.
   AM: 400Hz 30% mod.
2. Outputs
   Connect the non-inductive type resistors of 8ohms to the front speaker, center speaker, and rear speaker terminals unless otherwise noted.
3. Standard Knob Position
   VOLUME ..... Maximum

Amplifier Section

1. Idling Current Adjustment (Front)
Connect the DC voltmeter to the terminals IID and VCT on the pre.,/main amplifier pc boared. Adjust the semi-fixed resistors R529 and R530 so that the indication of voltmeter is 6±0.5mV.
Note: Open load, Adjust after switching on for 5 minutes.

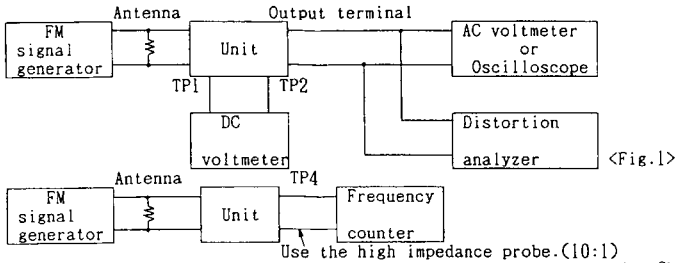
2. Idling Current Adjustment (Center)
Connect the DC voltmeter to the terminals IID and VCT on the rear and center amplifier pc board. Adjust the semi-fixed resistor R575 so that the indication of voltmeter is 6±0.5mV.
Note: Open load, Adjust after switching on for 5 minutes.



Pre.,/main amplifer pc board

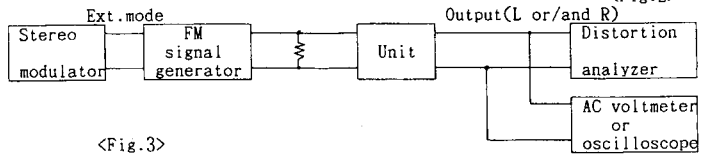
FM section

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig. 1	99.1MHz 1kHz, 75kHz devi. 65dBf (60dB)		99.1MHz	DC voltmeter	L101	0±20mV	FM MUTE/MODE switch: OFF (MONO) Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
VCO		Fig. 2	99.1MHz 1kHz, 75kHz devi. 65dBf (60dB)		99.1MHz	Frequency counter	R201	19kHz±10Hz	FM MUTE/MODE switch: ON (STEREO)
Stereo Distortion		Fig. 3	99.1MHz, Ext mod., 65dBf (60dB)	Channel L or R 1kHz	99.1MHz	Distortion analyzer	IFT on the front end	Minimum	Don't turn more than ±180°
Stereo Separation	1	Fig. 3	99.1MHz Ext. modulation 65dBf (60dB)	Channel L 1kHz	99.1MHz	Channel R AC voltmeter	R202	Minimum	Maximum and same separation.
	2			Channel R 1kHz		Channel L AC voltmeter		Minimum	
Tuning Level		Fig. 3	99.1MHz 19.2dBf (14dB)		99.1MHz	TUNED indicator	R101	Light on	FM MUTE/MODE switch: ON (STEREO)



<Fig.1>

<Fig.2>



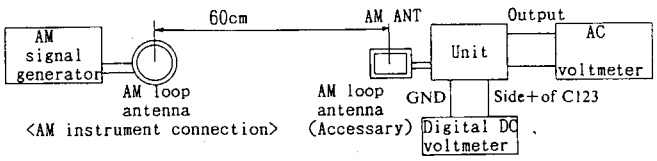
<Fig.3>

AM section

Step	AM SG output	Tuning frequency	Output indicator	Adjustment point	Adjust for
1		530kHz (531kHz)	Digital DC voltmeter	OSC coil on RF block (L151)	1.3±0.1V
2	600kHz (603kHz) 400Hz, 30% mod. 60dB/m	600kHz (603kHz)	AC voltmeter	RF coil on RF block (L151)	Maximum
3	990kHz 400Hz, 30% mod. 60dB/m	990kHz	AC voltmeter	L152	Maximum

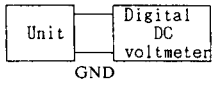
( ): 9kHz step model

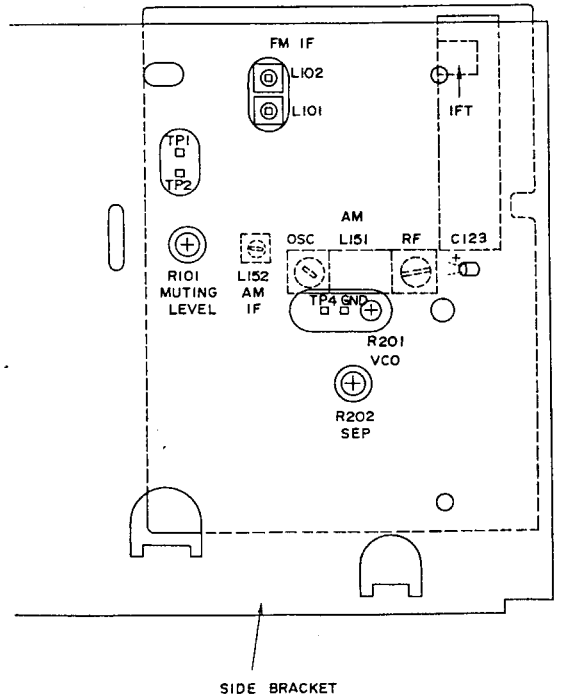
Reference Specifications
FM tuned voltage: 87.50MHz – 108.00MHz
1.6±0.4V – 7.9±0.4V
AM tuned voltage: 530kHz 1.3±0.5V
1710kHz 7.2±0.5V
Auto stop level: AM: Less than 65dB/m
FM: Less than 18dBμ



<AM instrument connection>

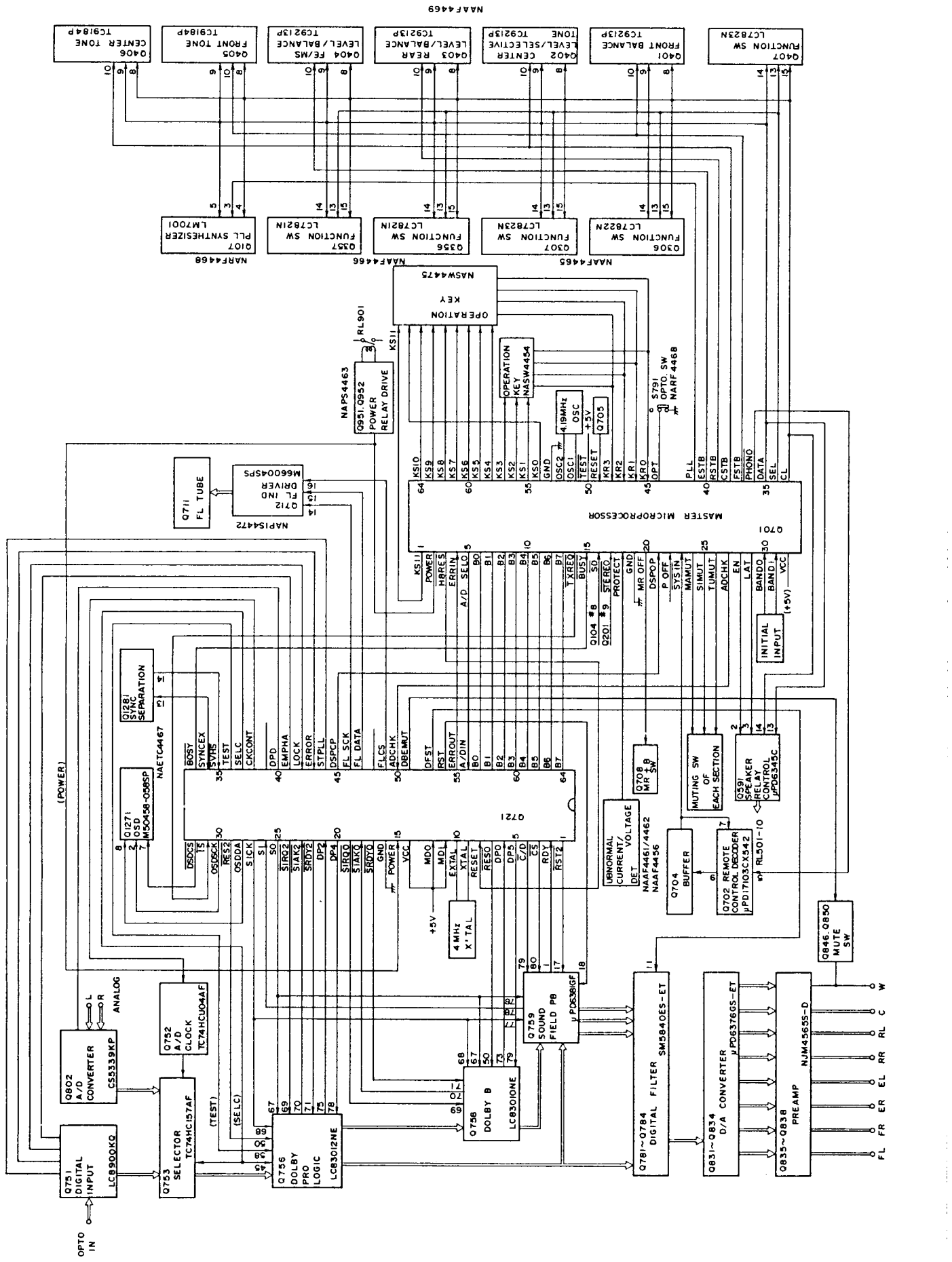
Confirmation of tuned voltage
Side+of C123





Tuner circuit pc board

MICROPROCESSOR CONNECTION DIAGRAM



No.	Symbol	I/O	Logic	Function
1	KS11	O	H	Auto scan output terminal.
2	POWER	O	H	Power relay control output terminal.
3	H8RES	O	H	Connect to the terminal RESET of DSP control microprocessor HD6433258P.
4	ERRIN	I	H	Connect to the terminal ERROUT of DSP control microprocessor .
5	A/DSEL	O	H	Connect to the terminal A/DSELI of DSP control microprocessor .
6	B0	B		Connect to the terminal B0 of DSP control microprocessor .
7	B1	B		Connect to the terminal B1 of DSP control microprocessor .
8	B2	B		Connect to the terminal B2 of DSP control microprocessor .
9	B3	B		Connect to the terminal B3 of DSP control microprocessor .
10	B4	B		Connect to the terminal B4 of DSP control microprocessor .
11	B5	B		Connect to the terminal B5 of DSP control microprocessor .
12	B6	B		Connect to the terminal B6 of DSP control microprocessor .
13	B7	B		Connect to the terminal B7 of DSP control microprocessor .
14	TXREQ	O	L	Connect to the terminal SI of DSP control microprocessor .
15	BUSYIN	I	L	Connect to the terminal BUSY of DSP control microprocessor .
16	SD	I	L	FM broadcast detection input terminal.
17	STEREO	I	L	FM stereo broadcast detection input terminal.Control the indicator STEREO.
18	PROTECT	I	H	Detection input terminal for the operation of protection circuit.Control the speaker protection relay.
19	Vdisp			Power supply terminal for FL tube.Connect to the ground.
20	MROFF	O	H	Multi room remote control transmitter control output terminal. Turn off the remote control signal from the other room.
21	DSPCHK	I	H	Connect to the terminal DSPOPEI of DSP control microprocessor .
22	POFF	I	L	Detection input terminal for the stoppage of electric current.
23	SYSIN	I	H	System code input terminal.Connect to the terminal STB of front tone control IC.
24	MAMUT	O	H	Audio main muting output trminal.
25	MSMUT	O	H	Audio multi source muting output terminal.
26	TUMUT	O	H	Tuner muting output terminal
27	AR/DT	O		Connect to the terminal ADCHK of DSP control microprocessor .
28	EN	O	H	Connect to the terminal EN of output extended IC μPD6345C.
29	LAT	O	L	Connect to the terminal LAT of output extended IC μPD6345C.
30	BAND0	I	H	Initializing setting input terminal for FM/AM reception band.
31	BAND1	I	H	
32	VCC			Power supply terminal.(+5V)
33	FVTCL	O	H	Connect to the terminal CL of analog switches LC7821N,LC7822N and LC7823N,terminal CK of electro volume TC9213P,teminal SCK of μPD6345 and terminal CK of tone contorl IC TC9184P.

FM/AM band settjng

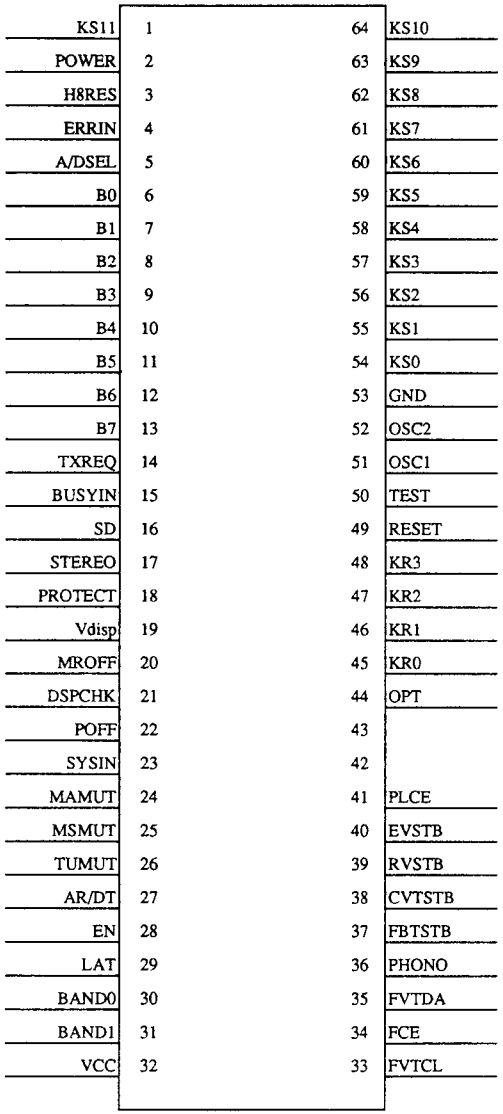
INITIALIZING INPUT					CHANNEL
BAND1	BAND0	REGION	BAND	FREQUENCY RANGE	SPACE
0	0	U.S.A	FM	87.50~108.00MHz	50kHz
			AM	530~1710kHz	10kHz
0	1	Europe 1	FM	87.50~108.00MHz	50kHz
			AM	522~1611kHz	9kHz
1	0	Europe 2	FM	87.50~108.00MHz	50kHz
			AM	531~1602kHz	9kHz
1	1	.Japan	FM	76.0~90.0MHz	100kHz
			AM	522~1611kHz	9kHz

Key matrix

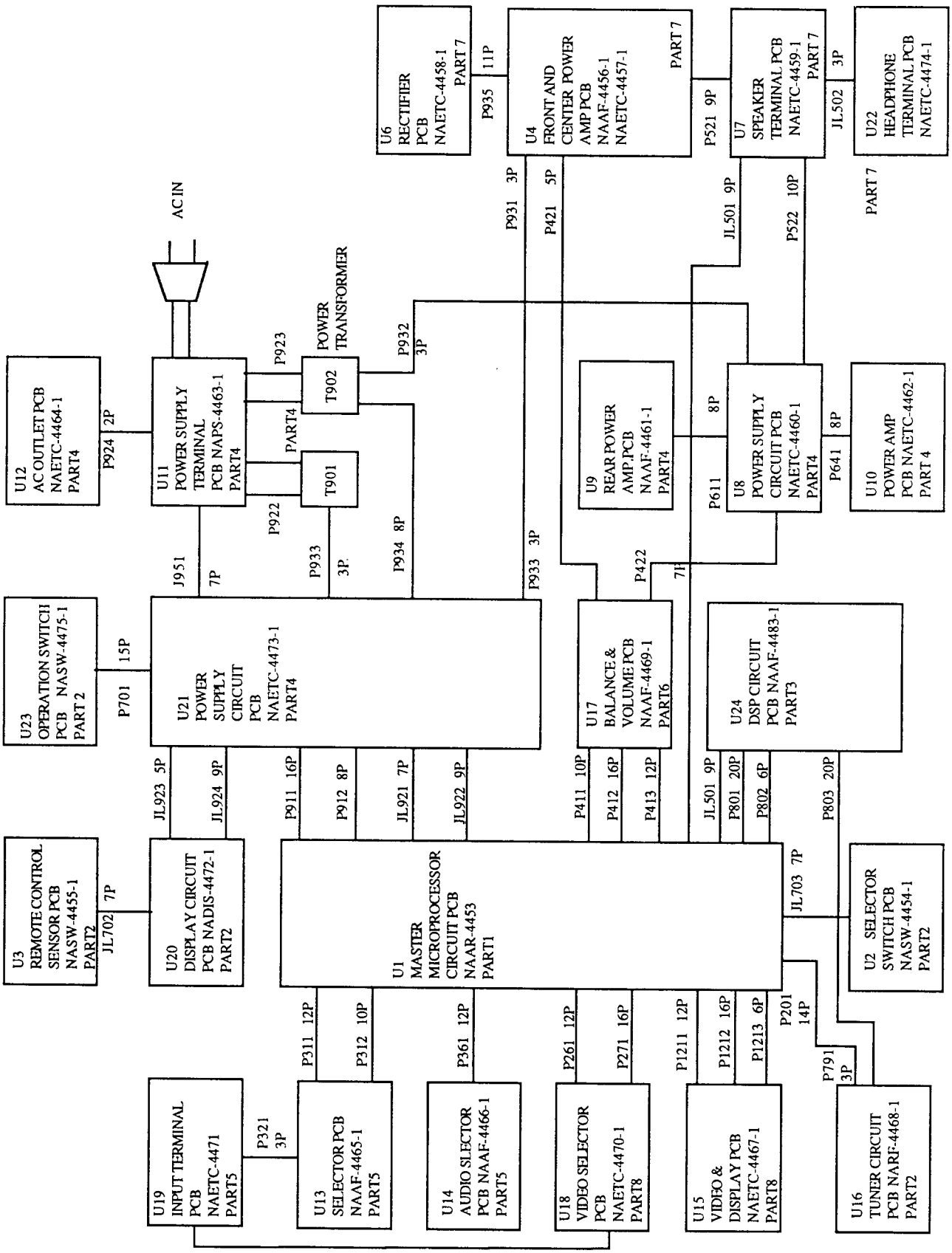
	KR0	KR1	KR2	KR3
KS0	POWER	REC OUT	MULTI SOURCE	MR OFF
KS1	VIDEO-1	VIDEO-2	VIDEO-3	VIDEO-4
KS2	VIDEO-5	VIDEO-6	TAPE-1	TAPE-2
KS3	FM	AM	PHONO	CD
KS4	MAIN	REMOTE	DIMMER	DIRECT
KS5	CLASS-A	CLASS-B	CLASS-C	CLASS-D
KS6	CLASS-E	CLASS-F	TEN-9	TEN-0
KS7	TEN-1	TEN-2	TEN-3	TEN-4
KS8	TEN-5	TEN-6	TEN-7	TEN-8
KS9	CLASS SCAN	TUNER DOWN	TEN-UP	SELECTIVE TONE
KS10	FM MUTING	MEMORY	SURROUND DOWN	SURROUND UP
KS11	PR DOWN	PR UP	PC DOWN	PC UP

NOTE: PR:PARAMETER SELECTOR
PC:PARAMETER CONTROLLER

No.	Symbol	I/O	Logic	Function
64	KS10	O	H	Auto scan output terminals
63	KS9	O	H	
62	KS8	O	H	
61	KS7	O	H	
60	KS6	O	H	
59	KS5	O	H	
58	KS4	O	H	
57	KS3	O	H	
56	KS2	O	H	
55	KS1	O	H	
54	KS0	O	H	
53	GND			Ground terminal
52	OSC2			Main system clock terminals.
51	OSC1			Connect the ceramic oscillator 4.19MHz.
50	TEST			Test terminal.Connect to the terminal VCC.
49	RESET	I	H	Reset input terminal.
48	KR3	I	H	Key input terminals.
47	KR2	I	H	
46	KR1	I	H	
45	KR0	I	H	
44	OPT	I	H	Changeover signal input terminal for optical. Check when the input selector switch is turned the VIDEO-4.
43				Not used.
42				Not used.
41	PLCE	O	H	Connect to the terminal CE of PLL IC LM7001.
40	EVSTB	O	H	Connect to the terminal STB of enhance volume control IC TC9213P-C.
39	RVSTB	O	H	Connect to the terminal STB of rear volume control IC TC9213P-R.
38	CVTSTB	O	H	Connect to the terminal STB of center volume control IC TC9213P-C and the terminal STB of center tone control IC TC9184P-C.
37	FBTSTB	O	H	Connect to the terminal STB of front balance volume control IC TC9213P-C and the terminal STB of front tone control IC TC9184P-C.
36	PHONO	O	L	PHONO control output terminal.L when the selector switch is PHONO.
35	FVTDA	O	X	Connect to the terminal DI of analog switches LC7821N,LC7822N and LC7823N,terminal DATA of electro volume TC9213P,teminal SIN of μ PD6345 and terminal DATA of tone contorl IC TC9184P.
34	FCE	O	H	Connect to the terminal CE of analog switches LC7821N,LC7822N and LC7823N.

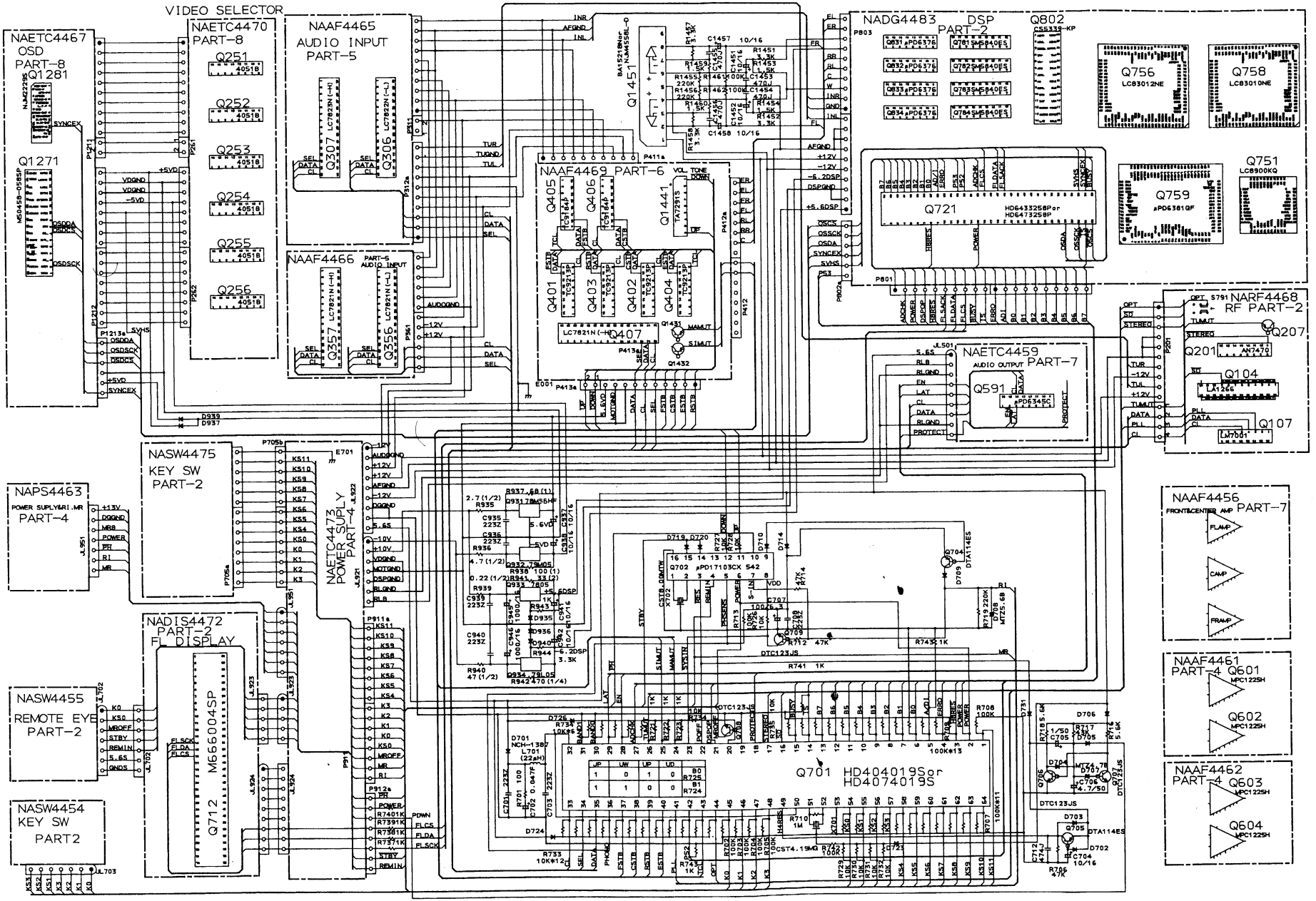


PRINTED CIRCUIT BOARD CONNECTION DIAGRAM



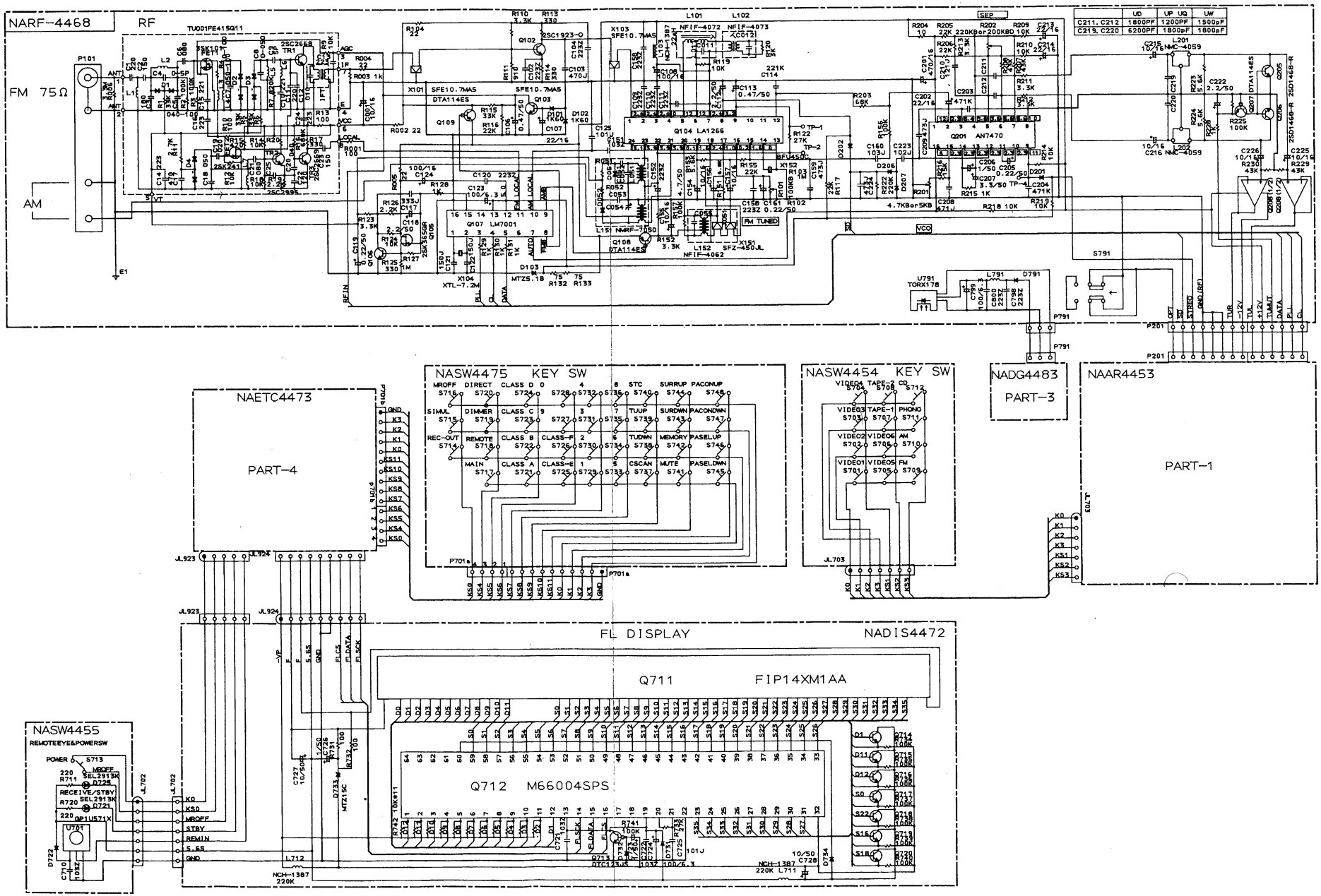
SCHEMATIC DIAGRAM PART 1

MASTER MICROPROCESSOR SECTION



SCHEMATIC DIAGRAM PART 2

TUNER SECTION



PRINTED CIRCUIT BOARD–PARTS LIST

MASTER MICROPROCESSOR CIRCUIT PC BOARD(NAAR-4453-1/1A)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs	
	Q701	22240599	HD404019S or HD4074019S(Before change)
	Q702	22240596	μPD17103CX-542
	Q931	222780565JRC	78M56
	Q932	222790055	79M05
	Q933	222780050	7805
	Q934	222790053	79L05
	Q1451	22240247 or 22240293	BA15218N or NJM4558L-D
		Transistors	
	Q704,Q705	2214350 or 2213510	RN2202 or DTA114ES
	Q706-Q709	2214660 or 2213640	RN1205 or DTC123JS
	Q710	2213710	DTA123JS(44～743p'cs.)
		Diodes	
	D701-D706	223163 or	1SS133 or
	D709,D710	223205	1SS270A
	D707	224450472	MTZ4.7B
	D708	224450562	MTZ5.6B
	D714,D715	223163 or	1SS133 or
	D719,D720	223205	1SS270A
	D726	223163 or	1SS133 or
	D935,D936	223205	1SS270A
	D937,D939	22380046 or 22380032	AM01Z or 1SR139-100
	D940	223163 or	1SS133 or
	D1702,D1703	223205	1SS270A
		Coil	
	L701	233411K220	NCH-1387
		Ceramic oscillators	
	X701	3010163	CST4.19MGW
	X702	3010190	CST8.00MTW
		Capacitors	
	C702	3000059	0.047F,5.5V,Super
	C703,C712	375524744	0.47μF±5%,50V,Plastic
	C704	354740109	1μF,16V,Elect.
	C705	354780109	1μF,50V,Elect.
	C706,C713	354780479	4.7μF,50V,Elect.
	C707	354721019	100μF,6.3V,Elect.
	C937,C938	354741009	10μF,16V,Elect.
	C941,C942	354741009	10μF,16V,Elect.
	C945,C946	354741029	1000μF,16V,Elect.
	C1451,C1452	354741009	10μF,16V,Elect.
	C1457,C1458	354741009	10μF,16V,Elect.
		Resistors	
	R707	49163104411	100kΩ×11,1/10W,Array
	R709	49163104413	100kΩ×13,1/10W,Array
	R733	49163103412	10kΩ×12,1/10W,Array
	R734	49163103406	10kΩ×6,1/10W,Array
	R935	442520274	2.7Ω ±5%,1/2W,Metal oxide film
	R936	442520474	4.7Ω ±5%,1/2W,Metal oxide film
	R937	441626804	68Ω ±5%,1W,Metal oxide film
	R938	441621014	100Ω ±5%,1W,Metal oxide film
	R939	442522294	0.22Ω ±5%,1/2W,Metal oxide film
	R940	442524704	47Ω ±5%,1/2W,Metal oxide film
	R941	441723304	33Ω ±5%,2W,Metal oxide film

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Plugs	
	P201a	25055501	NPLG-14P476
	P261a,P311a	25055500	NPLG-12P475
		Plugs	
	P262a,P412a	25055502	NPLG-16P477
	P312a,P411a	25055499	NPLG-10P474
	P361a,P413a	25055500	NPLG-12P475
	P801a,P803a	25055504	NPLG-20P479
	P802a,P1213a	25055497	NPLG-6P472
	P911a,P1212a	25055502	NPLG-16P477
	P912a	25055498	NPLG-8P473
	P1211a	25055500	NPLG-12P475
		Radiators	
		27160209	RAD-67
		27160221	RAD-74
		Screws	
		82143006	3P+6FN(BC),Pan head

TUNER CIRCUIT PC BOARD(NARF-4468-1/1A)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Front end	
	TU001	240089	FE415-G11
		Opto. receiving module	
	U791	24120034	TORX178
		ICs	
	Q104	22240039	LA1266
	Q107	22240090	LM7001
	Q201	22240242	AN7470
	Q208	22240247 or 22240293	BA15218N or NJM4558L-D
		Transistors	
	Q102	2211723	2SC1923-O
	Q103,Q106	2213284 or 2212115	2SC1740S-R or 2SC2458-GR
	Q105	2212445	2SK365-GR
	Q108,Q109	2214350 or 2213510	RN2202 or DTA114ES
		Transistors	
	Q205,Q206	2212794	2SD1468-R
	Q207	2214350 or 2213510	RN2202 or DTA114ES
		Diodes	
	D101,D102	223132	1K60
	D103	224450512	MTZ5.1B
	D201,D202	223163 or	1SS133 or
	D206,D207	223205	1SS270A
	D791	223163 or 223205	1SS133 or 1SS270A
		Ceramic filters	
	X101,X103	3010071	SFE10.7MA5(RED)
	X151	3010123	SFZ-450JL
	X152	3010076	BFU-450C
		Transformers & Coils	
	L101	233401	NFIF-4072
	L102	233402	NFIF-4073
	L103	233411K220	NCH-1387
	L152	232139	NMIF-4062
	L201,L202	233355A	NMC-4059
	L791	233411K220	NCH-1387

PRINTED CIRCUIT BOARD PARTS LIST

CAUTION: Replacement for transistor of mark ☆, if necess must be made from the same beta group (HFE) as original type.

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Resistors	
⚠	R901	431523355	3.3MΩ ±10%,1/2W,Solid <D>
	R951	442520824	8.2Ω ±5%,1/2W,Metal oxide film
		Terminals	
	P961	25045293	HSJ-1003-01-012
	P962	25045172	HSJ-1003-01-020
		25060092	NTM-1S33
	P922,P923	25060103	2P-10
		Relay	
⚠	RL901	25065248	NRL-1P15A-DC12-29
		Fuses	
⚠	F901	252053	8A ST-6 <D>
⚠	F902	252049	4A ST-6 <D>
⚠	F903	252077	4A-SE-EAK <G>
⚠	F904	252074	2A-SE-EAK <G>
		Fuseholders	
⚠	F901a,F902a	250113	SN5051 <D>
⚠	F903a,F904a	25050065	YSH403T <G>
		Socket	
	JL951	25050529	NSCT-7P352
		Bracket	
		27141059	Ground

REAR POWER AMPLIFIER PC BOARD(NAAF-4461-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs	
	Q601,Q602	22240108	μPC1225H
		Transistors	
	Q603,Q604	2213284	2SC1740S-R
*	Q605,Q606	2202063,	2SC4511-O,
*		2202064 or	2SC4511-Y or
*		2202066	2SC4511-P
*	Q607,Q608	2202053,	2SA1725-O,
*		2202054 or	2SA1725-Y or
*		2202056	2SA1725-P
	Q609,Q610	2211732 or	2SC1845-F or
		2211733	2SC1845-E
		Capacitors	
	C601,C602	353781009	10μF,50V,Elect.
	C605,C606	353721019	100μF,6.3V,Elect.
	C609,C610	374723334	0.033μF±5%,50V,Plastic
		Resistors	
	R613,R614	4500027	0.22Ω,2W,Metal plate
		Plug	
	P611	25055333	NPLG-8P316

FRONT ENHANCE/MULTI SOURCE POWER AMPLIFIER PC BOARD(NAAF-4462-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs	
	Q631,Q632	22240108	μPC1225H
		Transistors	
	Q633,Q634	2213284	2SC1740S-R
*	Q635,Q636	2202063,	2SC4511-O,
*		2202064 or	2SC4511-Y or
*		2202066	2SC4511-P
*	Q637,Q638	2202053,	2SA1725-O,
*		2202054 or	2SA1725-Y or
*		2202056	2SA1725-P

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Capacitors	
	C915	354752229	22000μF,25V,Elect.
	C916	354751029	1000μF,25V,Elect.
	C919,C920	354741009	10μF,16V,Elect.
	C921	354751029	1000μF,25V,Elect.
	C923	354741009	10μF,16V,Elect.
	C924	354762219	220μF,35V,Elect.
	C925	354782219	220μF,50V,Elect.
	C928	354754719	470μF,25V,Elect.
	C933,C935	354742229	2200μF,16V,Elect.
	C934	354744719	470μF,16V,Elect.
		Resistors	
	R903,R904	442522294	0.22Ω ±5%,1/2W,Metal oxide film
	R907	441620824	8.2Ω ±5%,1W,Metal oxide film
	R908	442521804	18Ω ±5%,1/2W,Metal oxide film
	R913	441623304	33Ω ±5%,1W,Metal oxide film
	R914	441623914	390Ω ±5%,1W,Metal oxide film
	R915	442520824	8.2Ω ±5%,1/2W,Metal oxide film
	R917	442523314	330Ω ±5%,1/2W,Metal oxide film
	R918	442522204	22Ω ±5%,1/2W,Metal oxide film
	R920,R922	442520104	1Ω ±5%,1/2W,Metal oxide film
	R931,R932	442522294	0.22Ω ±5%,1/2W,Metal oxide film
		Sockets	
	P911	25050449	NSCT-16P273
	P912	25050445	NSCT-8P269
	JL705b	25050715	NSCT-14P519
	JL921	25050758	NSCT-7P553
	JL922,JL924	25050760	NSCT-9P555
		Terminals	
	P933	25065280	6P-7.5L
	P934	25065288	8P-7.5L
		Radiators	
		27160209	RAD-67
		27160145	RAD-51
		Screws	
		82143006	3P+6FN(BC),Pan head

POWER SUPPLY CIRCUIT PC BOARD(NAPS-4463-1/1A)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Transistors	
	Q951	2214680 or	RN1226 or
		2213650	DTD113ZS
	Q952,Q963	2213560 or	RN1204 or
	Q961,Q962	221282	DTC144ES
		Diodes	
	D951-D954	22380046 or	AM01Z or
		22380032	1SR139-100
	D955	223163 or	1SS133 or
	D961-D965	223205	1SS270A
		Power transformer	
⚠	T903	2300670	NPT-1111D <D>
⚠		2300672	NPT-1111DG <G>
		Capacitors	
	C901	3500065A	DE7150FZ103P AC400V/125V,IS
	C952	354761019	100μF,35V,Elect.
	C961	354741009	10μF,16V,Elect.
	C962	374724724	4700pF±5%,50V,Plastic

NOTE:<D>:120V model only
<G>: 220V model only

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Transistors	
	Q639,Q640	2211732 or	2SC1845-F or
		2211733	2SC1845-E
		Capacitors	
	C631,C632	353781009	10μF,50V,Elect.
	C635,C636	353721019	100μF,6.3V,Elect.
	C639,C640	374723334	0.033μF±5%,50V,Plastic
		Resistors	
	R643,R644	4500027	0.22Ω,2W,Metal plate
		Plug	
	P641	25055333	NPLG-8P316

POWER SUPPLY CIRCUIT PC BOARD(NAETC-4460-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Diodes	
	D611,D612	223163 or	1SS133 or
		223205	1SS270A
	D902	22380038	RBV602
		Coils	
	L601,L602	231209	S-0.4A
	L631,L632	231209	S-0.4A
		Capacitors	
	C611,C612	374724734	0.047μF±5%,50V,Plastic
	C641,C642	374724734	0.047μF±5%,50V,Plastic
	C909,C910	3504254	8200μF,50V,Elect.
		Resistors	
	R615-R618	442520824	8.2Ω±5%,1/2W,Metal oxide film
	R645-R648	442520824	8.2Ω±5%,1/2W,Metal oxide film
		Socket	
	P422	2009990213	NSAS-14P0312
		Plug	
	P522a	25055140	NPLG-10P124
		Terminal	
	P932	25060073	3P-7.5

AC OUTLET PC BOARD(NAETC-4464-1/1A)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
	P902	25050388	NSCT-6P215,Socket
	P924	2009990078	NSAS-4P0115,Socket <D>

FRONT AND CENTER POWER AMPLIFIER PC BOARD(NAAF-4456-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Transistors	
	Q501,Q502	2213676,	2SC3067-F,
	Q561	2213677 or	2SC3067-G or
		2213678	2SC3067-H
	Q503,Q504	2213354	2SA933S-R
	Q505,Q506	2211732 or	2SC1845-F or
	Q563	2211733	2SC1845-E
	Q507,Q508	2213284	2SC1740S-R
	Q509,Q510	2211353 or	2SA949-O or
	Q565	2211354	2SA949-Y
	Q511,Q512	2211633 or	2SC2229-O or
		2211634	2SC2229-Y
	Q513,Q514	2213284	2SC1740S-R
	Q515,Q516	2202034 or	2SD1763A-D or
	Q568	2202035	2SD1763A-E

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Transistors	
	Q517,Q518	2202024 or	2SB1186A-D or
	Q569	2202025	2SB1186A-E
*	Q519,Q520	2201482 or	2SC3821-R or
*	Q570	2201483	2SC3821-O
*	Q521,Q522	2201472 or	2SA1302-R or
*	Q571	2201473	2SA1302-O
	Q523,Q524	2211633 or	2SC2229-O or
	Q566,Q572	2211634	2SC2229-Y
	Q562	2213354	2SA933S-R
	Q564,Q567	2213284	2SC1740S-R
		Diodes	
	D501-D510	223163 or	1SS133 or
	D561-D565	223205	1SS270A
		Coils	
	L501,L502	231209	S-0.4A
	L561	231209	S-0.4A
		Capacitors	
	C501,C502	354781009	10μF,50V,Elect.
	C505,C506	354742219	220μF,16V,Elect.
	C513,C514	354780229	2.2μF,50V,Elect.
	C527-C530	374724734	0.047μF±5%,50V,Plastic
	C533-C536	354794709	47μF,100V,Elect.
	C561	354781009	10μF,50V,Elect.
	C563	354742219	220μF,16V,Elect.
	C567	354780229	2.2μF,50V,Elect.
	C574,C575	374724734	0.047μF±5%,50V,Plastic
	C577,C578	354794709	47μF,100V,Elect.
	C905,C906	3504253	15000μF,69V,Elect.
		Resistors	
	R527,R528	442522704	27Ω±5%,1/2W,Metal oxide film
	R529,R530	5210240	N06HR10KBE,Semi-fixed
	R533,R534	442529104	91Ω±5%,1/2W,Metal oxide film
	R535,R536	442522714	270Ω±5%,1/2W,Metal oxide film
	R537,R538	4500031	0.22Ω,5W,Metal plate
	R539,R540	442520824	8.2Ω±5%,1/2W,Metal oxide film
	R541,R542	441720824	8.2Ω±5%,2W,Metal oxide film
	R543,R544	442522724	2.7kΩ±5%,1/2W,Metal oxide film
	R549-R552	442520104	1Ω±5%,1/2W,Metal oxide film
	R557,R558	442520104	1Ω±5%,1/2W,Metal oxide film
	R574	442522704	27Ω±5%,1/2W,Metal oxide film
	R575	5210240	N06HR10KBE,Semi-fixed
	R577	442529104	91Ω±5%,1/2W,Metal oxide film
	R578	442522714	270Ω±5%,1/2W,Metal oxide film
	R579	4500031	0.22Ω,5W,Metal plate
	R580	442520824	8.2Ω±5%,1/2W,Metal oxide film
	R581	441720824	8.2Ω±5%,2W,Metal oxide film
	R582	442522724	2.7kΩ±5%,1/2W,Metal oxide film
	R585,R586	442520104	1Ω±5%,1/2W,Metal oxide film
	R589	442520104	1Ω±5%,1/2W,Metal oxide film
	R1511	442520104	1Ω±5%,1/2W,Metal oxide film
		Socket	
	P421	2009990024	NSAS-10P0048
		Plugs	
	P511-P514	25055329	NPLG-4P312
	P521a	25055139	NPLG-9P123
	P561,P562	25055329	NPLG-4P312
	P935	25055336	NPLG-11P319
		Terminals	
	P515,P516	25065404	2P-5L
	P563	25065404	2P-5L
	P931	25060073	3P-7.5

PRINTED CIRCUIT BOARD PARTS LIST

RECTIFIER PC BOARD(NAETC-4458-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
	D901	22380044	RBV1506,Diode

HEADPHONE TERMINAL PC BOARD(NAETC-4474-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
	P504	25045376	YKB22-5138

SPEAKER TERMINAL PC BOARD(NAETC-4459-1)

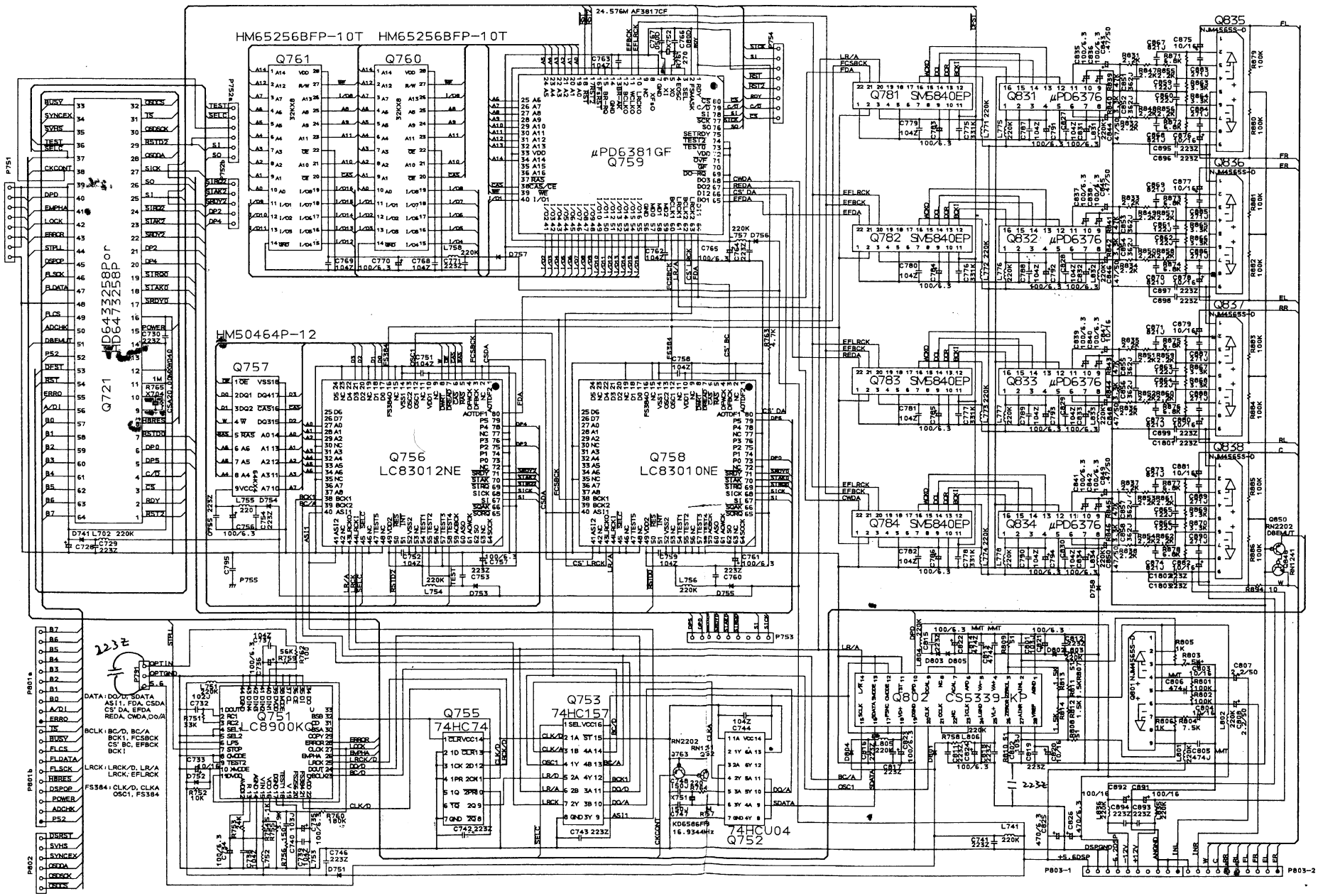
MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		IC	
	Q591	22240211	μ PD6345C
		Transistors	
	Q691,Q692	2211732 or	2SC1845-F or
		2211733	2SC1845-E
	Q693	2211792 or	2SA992-F or
		2211793	2SA992-E
		Diodes	
	D591-D597	223163 or	1SS133 or
		223205	1SS270A
	D691	224450472	MTZ4.7B
		Capacitors	
	C591,C691	354721019	100μ F,6.3V,Elect.
		Resistors	
	R1503,R1504	441623914	390Ω ±5%,1W,Metal oxide film
		Relaies	
	RL501-RL503	25065451	NRL-1P5A-DC24-076
	RL504	25065396	NRL-2P1.25A-DC24-067
	RL505-RL510	25065451	NRL-1P5A-DC24-076
		Terminals	
	P501,P502	25060138	NTM-8PDMN066
	P503	25060162	NTM-4PDMN088
	P661,P663	25045365	NPJ-2PDBL-210
	P662	25045366	NPJ-2PDBL-211
	P664	25045365	NPJ-2PDBL-210
		Sockets	
	JL501	25050760	NSCT-9P555
	JL502	25050754	NSCT-3P549
	P521	2009990216A	NSAS-18P0315
	P522	2009990215A	NSAS-20P0314

DSP CIRCUIT PC BOARD(NAAF-4483-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs	
	Q721	22240603 or	HD6473258P or
		22240604	HD6433258P
	Q751	22240600R3	LC8900KQ
	Q752	222740045R1TO	TC74HCU04AF
	Q753	222741575R1TO	TC74HC157AF
	Q755	222740745R1TO	TC74HC74AF
	Q756	22240602R3	LC83012NE
	Q757	22240607	HM50464P-12
	Q758	22240601R3	LC83010NE
	Q759	22240570R3	μ PD6381GF
	Q760,Q761	22240571R2 or	HM65256BLFP-10T or
		22240583R2	TC51832FL-10
	Q781-Q784	22240554R2	SM5840ES-ET
	Q801	22240273	NJM4565S-D
	Q802	22240524	CS5339-KP
	Q831-Q834	22240555R2	μ PD6376GS-ET
	Q835-Q838	22240273	NJM4565S-D
		Transistors	
	Q762	2213631 or	RN1241-A or
		2213632	RN1241-B
	Q763	2214350 or	RN2202 or
		2213510	DTA114ES
	Q850	2214350 or	RN2202 or
		2213510	DTA114ES
		Diodes	
	D741	223163 or	1SS133 or
	D751-D758	223205	1SS270A
	D801-D805	223163 or	1SS133 or
		223205	1SS270A
		Coils	
	L702	233411K220	NCH-1387
	L751-L759	233411K220	NCH-1387
	L771-L778	233411K220	NCH-1387
	L801-L806	233411K220	NCH-1387
	L831-L836	233411K220	NCH-1387
		Oscillators	
	X704	3010198	CSA20.00MX040,Ceramic
	X751	3010112	KD6586FFB,Crystal
	X752	3010176	AF3817CF,Crystal
		Capacitors	
	C728,C770	354721019	100μ F,6.3V,Elect.
	C730	375524744	0.47μ F±5%,50V,Plastic
	C732	374721024	1000pF±5%,50V,Plastic
	C733	354741009	10μ F,16V,Elect.
	C734-C736	354721019	100μ F,6.3V,Elect.
	C740	374721034	0.01μ F±5%,50V,Plastic
	C756,C757	354721019	100μ F,6.3V,Elect.
	C761,C765	354721019	100μ F,6.3V,Elect.
	C783-C786	354721019	100μ F,6.3V,Elect.
	C791-C794	354721019	100μ F,6.3V,Elect.
	C801,C802	374721024	1000pF±5%,50V,Plastic
	C803,C804	354741009	10μ F,16V,Elect.
	C805,C806	375524744	0.47μ F±5%,50V,Plastic
	C807,C808	354780229	2.2μ F,50V,Elect.
	C813,C814	375524744	0.47μ F±5%,50V,Plastic
	C820	354741009	10μ F,16V,Elect.
	C821-C824	354721019	100μ F,6.3V,Elect.
	C825,C826	354724719	470μ F,6.3V,Elect.
	C831-C842	354721019	100μ F,6.3V,Elect.
	C843-C850	354784799	0.47μ F,50V,Elect.
	C851-C858	371123624	3600pF±5%,50V,Mylar
	C859-C866	374721224	1200pF±5%,50V,Plastic
	C867-C874	374728214	820pF±5%,50V,Plastic
	C875-C882	354741009	10μ F,16V,Elect.
	C883-C890	370132714	270pF±5%,100V,Plastic
	C891,C892	354741019	100μ F,16V,Elect.
		Sockets	
	P801	25050451	NSCT-20P275
	P802,P803	25050446	NSCT-10P270
		Cord ass'y	
		2061712050	
		Plug	
	P791a	25055133	NPLG-3P117

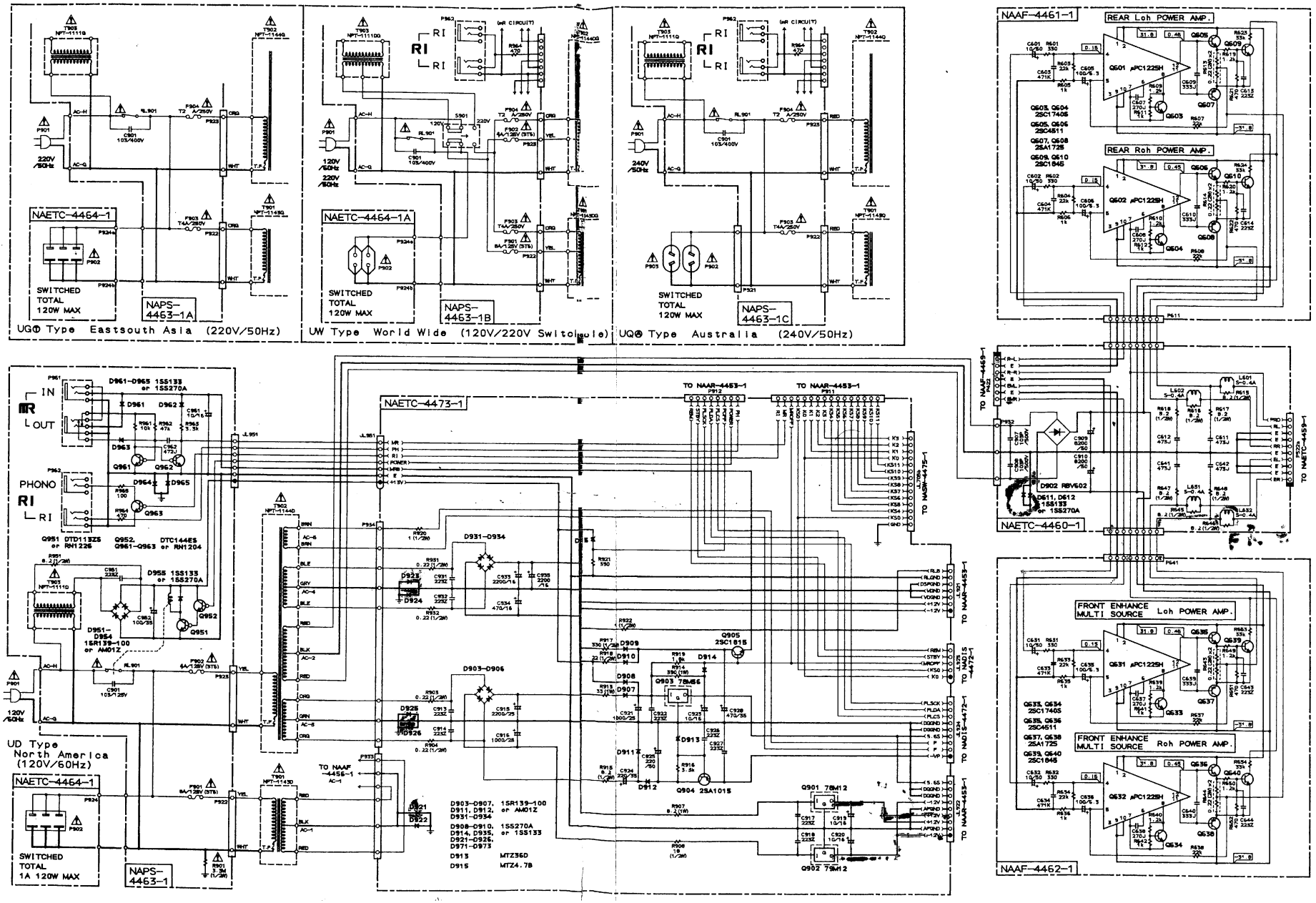
SCHEMATIC DIAGRAM PART 3

SOUND FIELD SECTION



SCHEMATIC DIAGRAM PART 4

REAR/FRONT ENHANCE POWER AMPLIFIER AND POWER SUPPLY SECTION



SELECTOR CIRCUIT PC BOARD(NAAF-4465-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs	
	Q301	22240191	NJM4565D-D
	Q302-Q305	22240247 or	BA15218N or
		22240293	NJM4558L-D
	Q306	22240270	LC7822N
	Q307	22240339	LC7823N
		Capacitors	
	C303,C304	354780229	2.2 μ F,50V,Elect.
	C307,C308	354721019	100 μ F,6.3V,Elect.
	C309,C310	374726224	6200pF±5%,50V,Plastic
	C311,C312	374721824	1800pF±5%,50V,Plastic
	C313-C316	353741009	10 μ F,16V,Elect.
	C329,C330	354741009	10 μ F,16V,Elect.
		Terminals	
	P301	25045311	NPJ-2PDBL-168
	P302	25045364	NPJ-4PDWH-209
	P303	25045318	NPJ-6PDBL-175
		Sockets	
	P311	25050447	NSCT-12P271
	P312	25050446	NSCT-10P270
		Plug	
	P321a	25055234	NPLG-3P218

AUDIO SELECTOR PC BOARD(NAAF-4466-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs	
	Q351-Q355	22240247 or	BA15218N or
		22240293	NJM4558L-D
	Q356,Q357	22240280	LC7821N
		Capacitors	
	C367,C368	354741009	10 μ F,16V,Elect.
		Terminals	
	P351	25045364	NPJ-4PDWH-209
	P352,P353	25045318	NPJ-6PDBL-175
	P361	25050447	NSCT-12P271

INPUT TERMINAL PC BOARD(NAETC-4471-1)

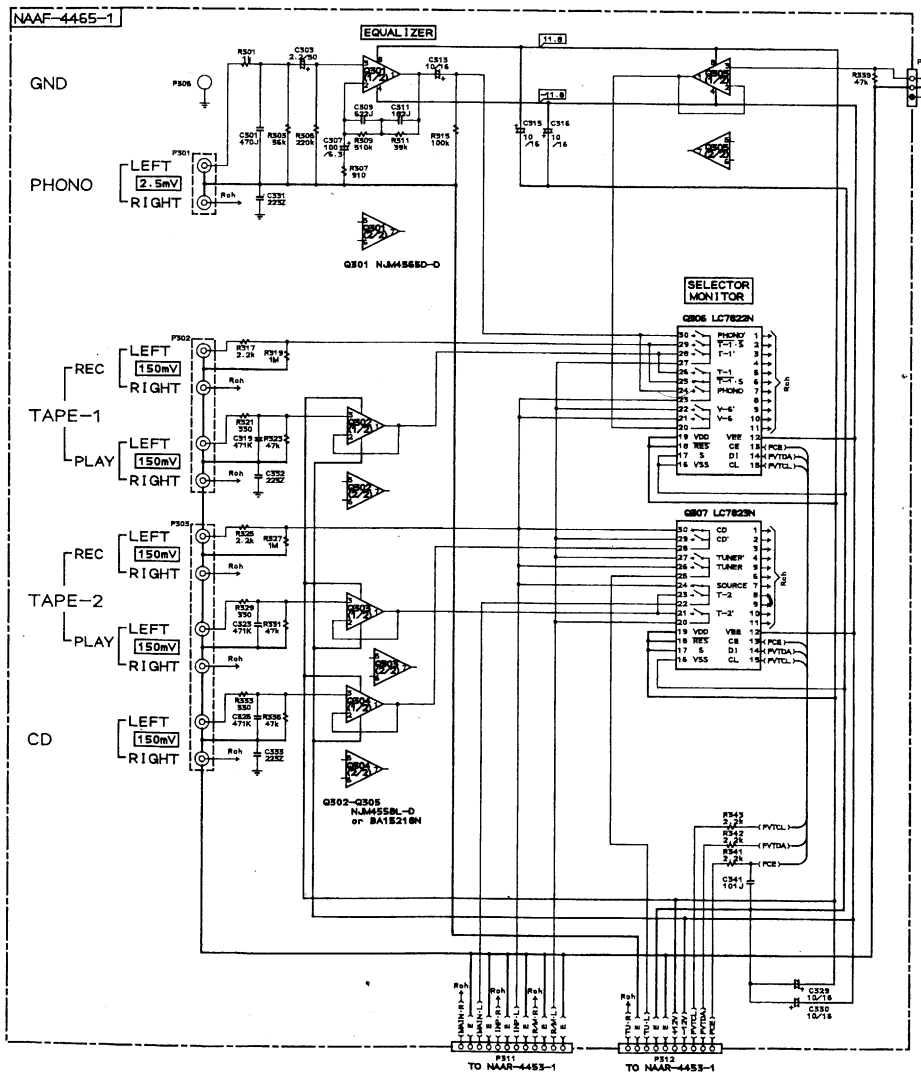
MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
	D281-D284	223163 or	1SS133 or
		223205	1SS270A,Diodes
	P260	25050453	NSCT-4P277,Socket
	P271	2009990214	NSAS-8P0313,Socket
	P321	2000676	NSAS-6P632,Socket
	P304	25045321	NPJ-3PDBL178,Terminal
	P322	2061712050	Cord ass'y

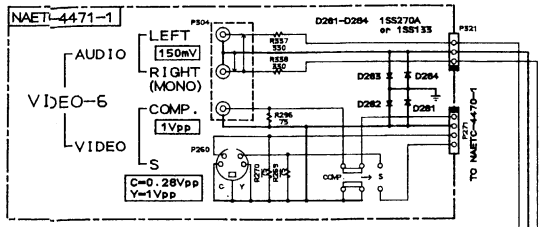
SCHEMATIC DIAGRAM PART 5

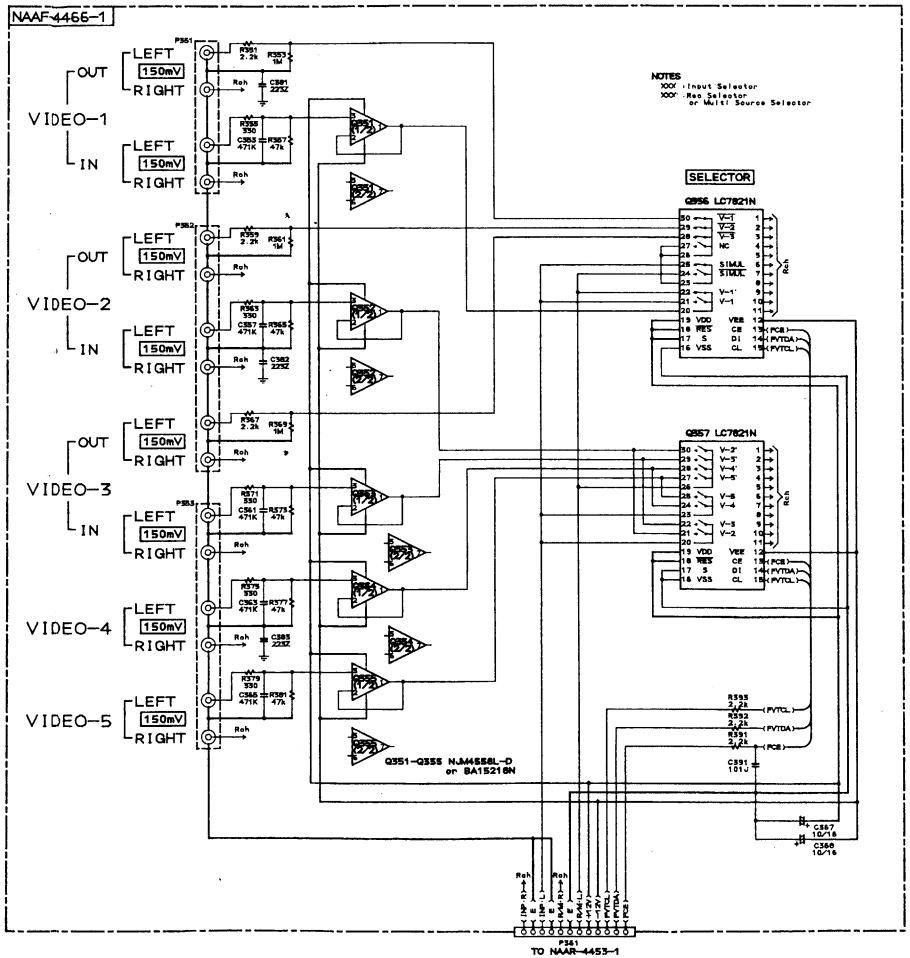
INPUT TERMINAL SECTION

NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) ☐ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (≠) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX) 3pF=030, 33pF=330, 330pF=331, 0.033μF=333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES ON PC BOARD ARE THE PRINTING SIDE OF THE PARTS. EX) ▬▬ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



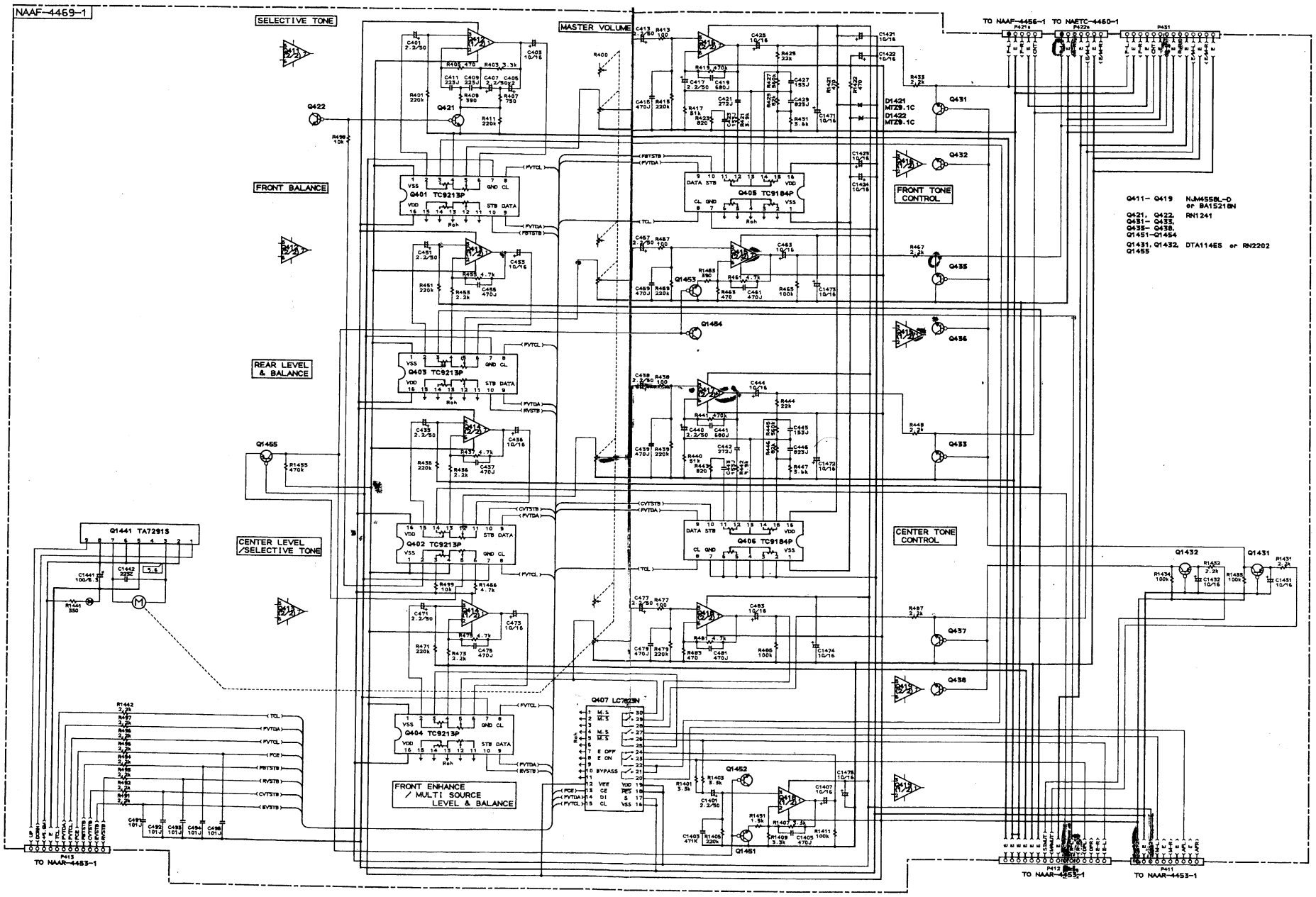




57~58

SCHEMATIC DIAGRAM PART 6

PREAMPLIFIER SECTION



59~60

BALANCE AND VOLUME CIRCUIT PC BOARD(NAAF-4469-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs	
	Q401-Q404	22240266	TC9213P
	Q405,Q406	22240605	TC9184P
	Q407	22240339	LC7823N
	Q411-Q419	22240247 or	BA15218N or
		22240293	NJM4558L-D
	Q1441	22240239	TA7291S
		Transistors	
	Q421,Q422	2213631 or	RN1241-A or
		2213632	RN1241-B
	Q431-Q433	2213631 or	RN1241-A or
	Q435-Q438	2213632	RN1241-B
	Q1431,Q1432	2214350 or	RN2202 or
	Q1455	2213510	DTA114ES
	Q1451-Q1454	2213631 or	RN1241-A or
		2213632	RN1241-B

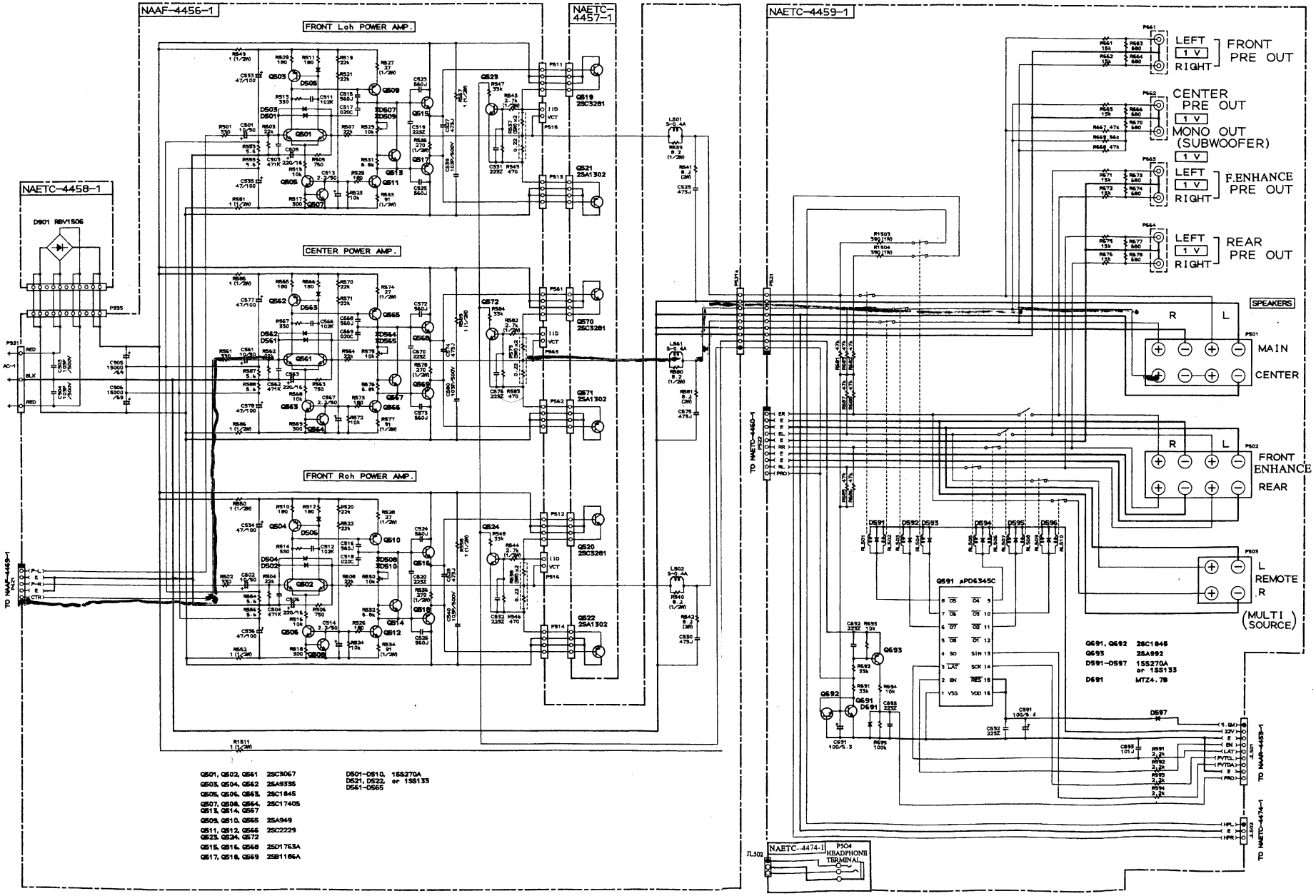
MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Diodes	
	D1421,D1422	224450913	MTZ9.1C
		Capacitors	
	C401,C402	354780229	2.2 μ F,50V,Elect.
	C403,C404	354741009	10 μ F,16V,Elect.
	C405-C408	354780229	2.2 μ F,50V,Elect.
	C409-C412	374722234	0.022 μ F $\pm$5%,50V,Plastic
	C413,C414	354780229	2.2 μ F,50V,Elect.
	C417,C418	354780229	2.2 μ F,50V,Elect.
	C421,C422	374722724	2700pF $\pm$5%,50V,Plastic
	C423,C424	374721534	0.015 μ F $\pm$5%,50V,Plastic
	C425,C426	354741009	10 μ F,16V,Elect.
	C427,C428	374721534	0.015 μ F $\pm$5%,50V,Plastic
	C429,C430	374728234	0.082 μ F $\pm$5%,50V,Plastic
	C435	354780229	2.2 μ F,50V,Elect.
	C436	354741009	10 μ F,16V,Elect.
	C438,C440	354780229	2.2 μ F,50V,Elect.

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Capacitors	
	C442	374722724	2700pF±5%,50V,Plastic
	C443	374721534	0.015μF±5%,50V,Plastic
	C444	354741009	10μF,16V,Elect.
	C445	374721534	0.015μF±5%,50V,Plastic
	C446	374728234	0.082μF±5%,50V,Plastic
	C451,C452	354780229	2.2μF,50V,Elect.
	C453,C454	354741009	10μF,16V,Elect.
	C457,C458	354780229	2.2μF,50V,Elect.
	C463,C464	354741009	10μF,16V,Elect.
	C471,C472	354780229	2.2μF,50V,Elect.
	C473,C474	354741009	10μF,16V,Elect.
	C477,C478	354780229	2.2μF,50V,Elect.
	C483,C484	354741009	10μF,16V,Elect.
	C1401,C1402	354780229	2.2μF,50V,Elect.
	C1407,C1408	354741009	10μF,16V,Elect.
	C1421-C1424	354741009	10μF,16V,Elect.
	C1431,C1432	354741009	10μF,16V,Elect.
	C1441	354721019	100μF,6.3V,Elect.
	C1471-C1475	354741009	10μF,16V,Elect.

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		Resistor	
	R400	5140006A	N16RHL100KA25F,Variable
		Sockets	
	P411	25050446	NSCT-10P270
	P412	25050449	NSCT-16P273
	P413	25050447	NSCT-12P271
		Plugs	
	P421a	25055236	NPLG-5P220
	P422a	25055238	NPLG-7P222
	P431	25055558	NPLG-14P532
		Clamps	
	P441,P442	260224	CP-1S

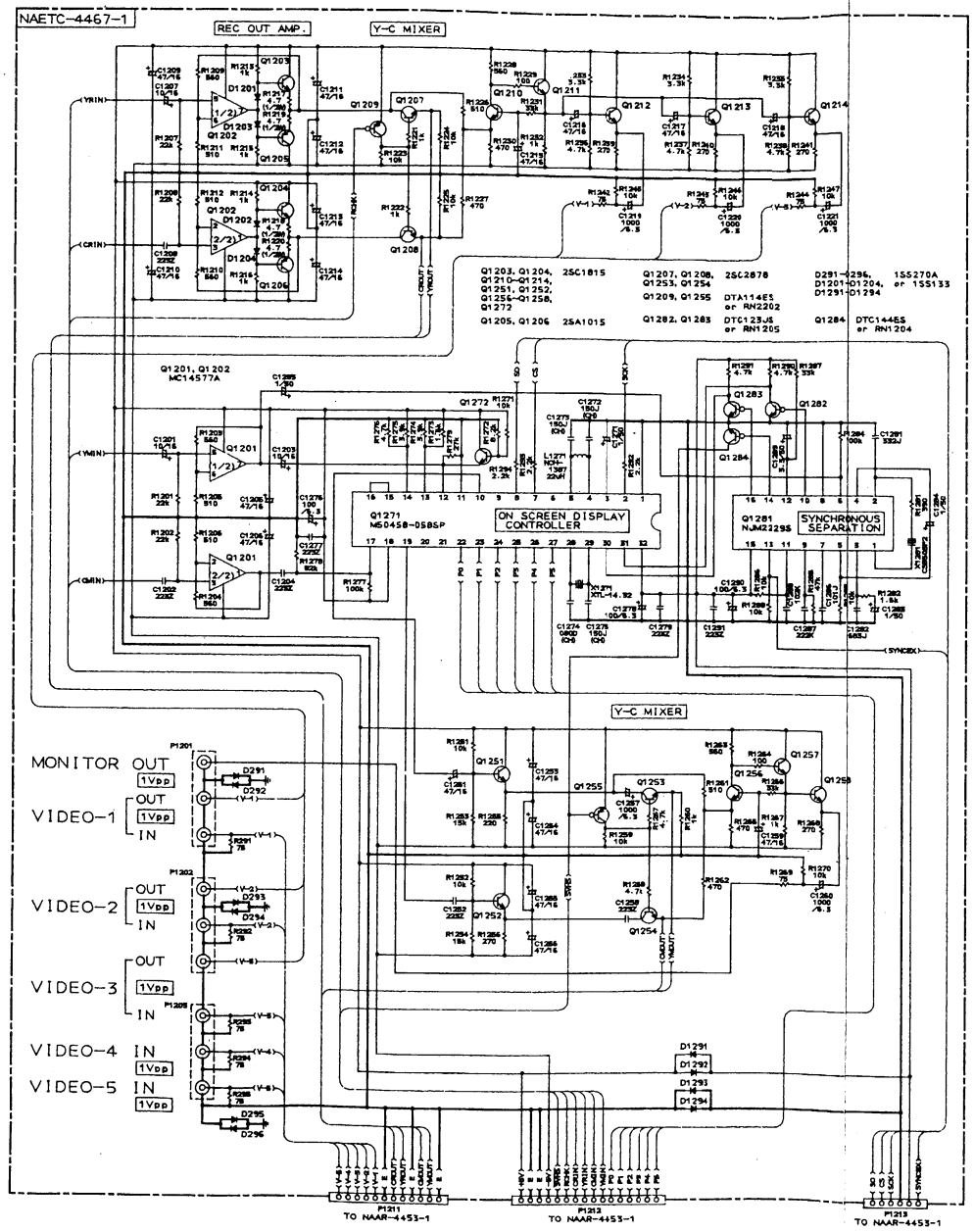
SCHEMATIC DIAGRAM PART 7

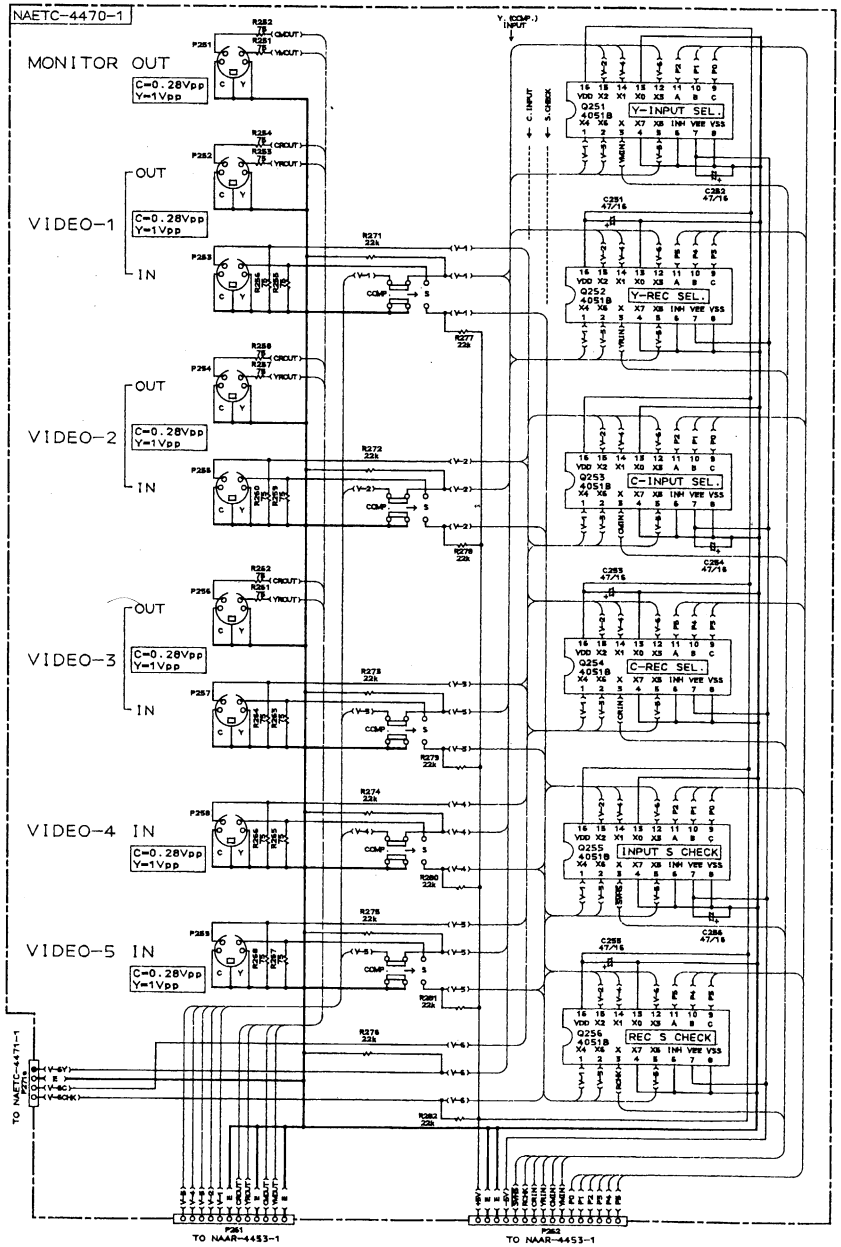
FRONT/CENTER POWER AMPLIFIER SECTION



SCHEMATIC DIAGRAM PART 8

VIDEO SECTION





PRINTED CIRCUIT BOARD PARTS LIST

VIDEO COMPOSITE & DISPLAY PC BOARD(NAETC-4467-1)

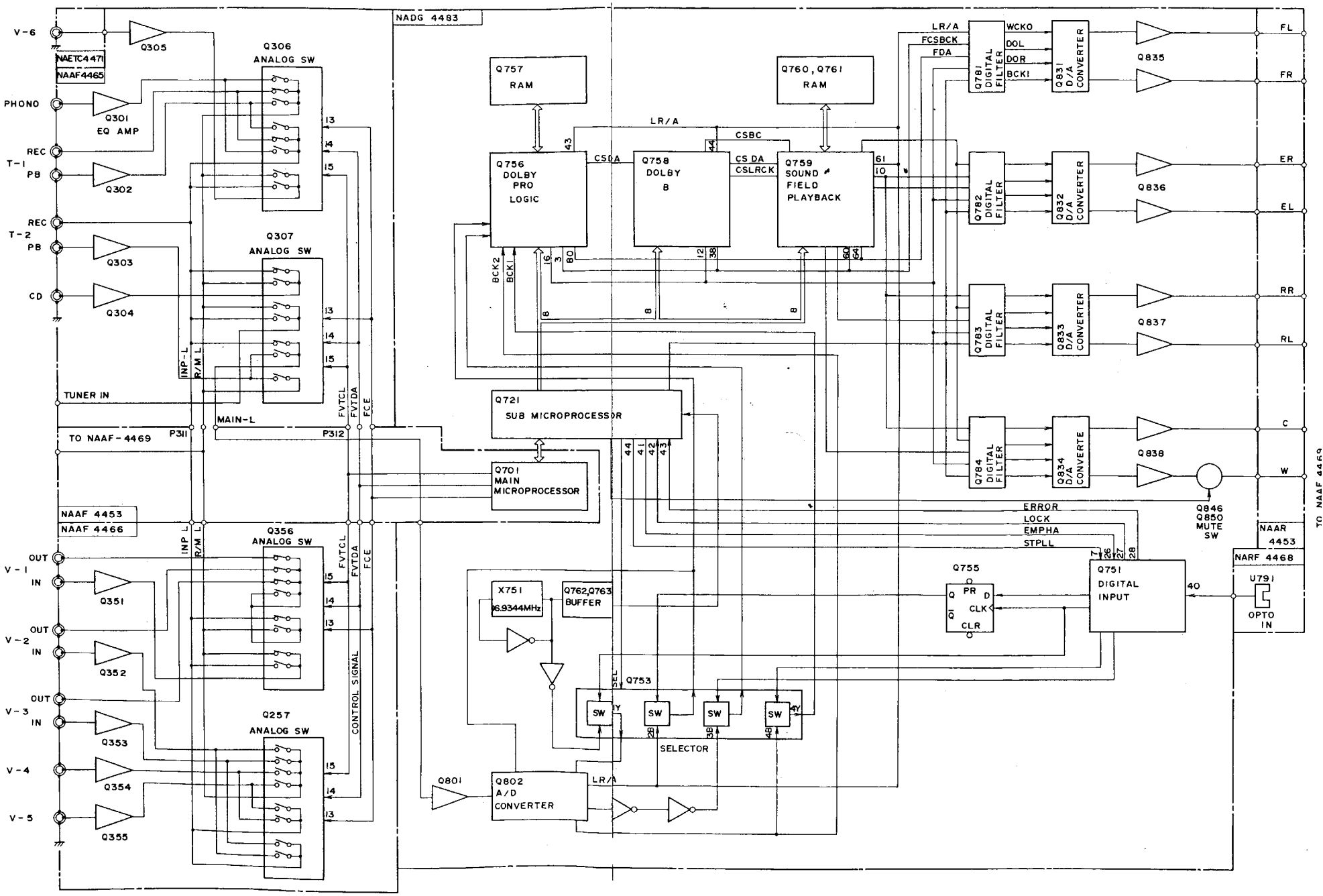
MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs	
	Q1201,Q1202	22240401	MC14577A
	Q1271	22240402	M50458-058SP
	Q1281	22240374	NJM2229S
		Transistors	
	Q1203,Q1204	2211255	2SC1815-GR
	Q1205,Q1206	2211455	2SA1015-GR
	Q1207,Q1208	2212285 or	2SC2878-A or
	Q1253,Q1254	2212286	2SC2878-B
	Q1209,Q1255	2214350 or	RN2202 or
		2213510	DTA114ES
	Q1210-Q1214	2211255	2SC1815-GR
	Q1251,Q1252	2211255	2SC1815-GR
	Q1256-Q1258	2211255	2SC1815-GR
	Q1272	2211255	2SC1815-GR
	Q1282,Q1283	2214660 or	RN1205 or
		2213640	DTC123JS
	Q1284	2213560 or	RN1204 or
		221282	DTC144ES
		Crystal	
	X1271	3010167	XTL-14.32M
		Diodes	
	D291-D296	223163 or	1SS133 or
	D1201-D1204	223205	1SS270A
	D1291-D1294	223163 or	1SS133 or
		223205	1SS270A
		Ceramic oscillator	
	X1281	3010168	CSB503F2
		Coil	
	L1271	233411K220	NCH-1387
		Capacitors	
	C1201,C1203	354741009	10 μ F,16V,Elect.
	C1205,C1206	354744709	47 μ F,16V,Elect.
	C1207	354741009	10 μ F,16V,Elect.
	C1209-C1218	354744709	47 μ F,16V,Elect.
		Capacitors	
	C1219-C1221	354721029	1000 μ F,6.3V,Elect.
	C1251,C1259	354744709	47 μ F,16V,Elect.
	C1253-C1256	354744709	47 μ F,16V,Elect.
	C1257,C1260	354721029	1000 μ F,6.3V,Elect.
	C1271	354780109	1 μ F,50V,Elect.
	C1276,C1278	354721019	100 μ F,6.3V,Elect.
	C1281	374723324	3300pF $\pm$5%,50V,Plastic
	C1282	374726834	0.068 μ F $\pm$5%,50V,Plastic
	C1283-C1285	354780109	1 μ F,50V,Elect.
	C1289	354780339	3.3 μ F,50V,Elect.
	C1290	354721019	100 μ F,6.3V,Elect.
		Resistors	
	R1217-R1220	442520474	4.7 Ω $\pm$5%,1/2W,Metal oxide film
		Terminal	
	P1201-P1203	25045363	NPJ-3PDYE-208
		Sockets	
	P1211	25050447	NSCT-12P271
	P1212	25050449	NSCT-16P273
	P1213	25050444	NSCT-6P268

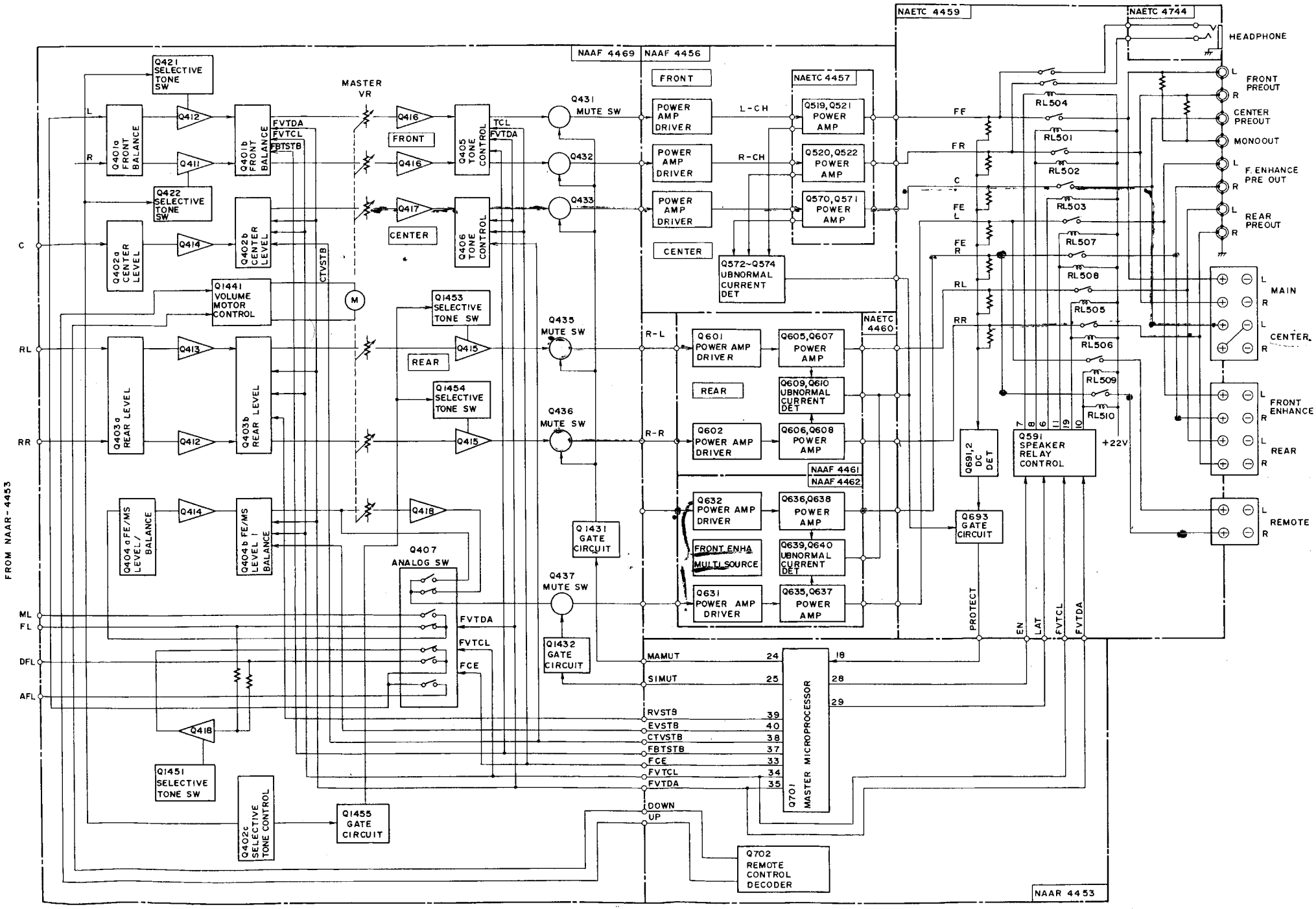
VIDEO SELECTOR PC BOARD(NAETC-4470-1)

MARK	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs	
	Q251-Q256	222840511	4051B
		Capacitors	
	C251-C256	354744709	47 μ F,16V,Elect.
		Sockets	
	P251,P252	25050390	NSCT-4P217
	P253,P255	25050452	NSCT-4P276
	P254,P256	25050390	NSCT-4P217
	P257-P259	25050452	NSCT-4P276
	P261	25050447	NSCT-12P271
	P262	25050449	NSCT-16P273
		Plug	
	P271	25055235	NPLG-4P219

BLOCK DIAGRAM

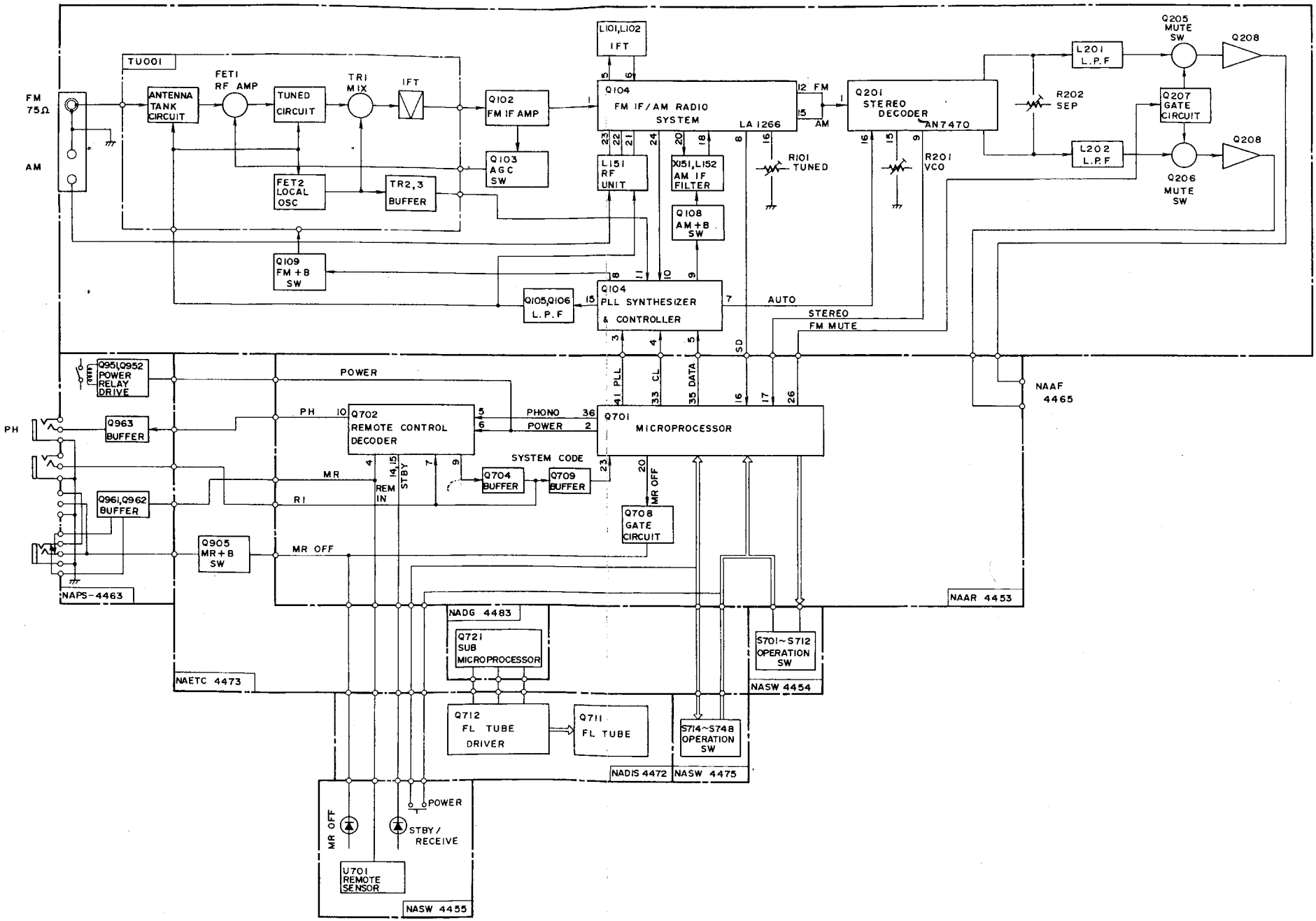
AMPLIFIER SECTION



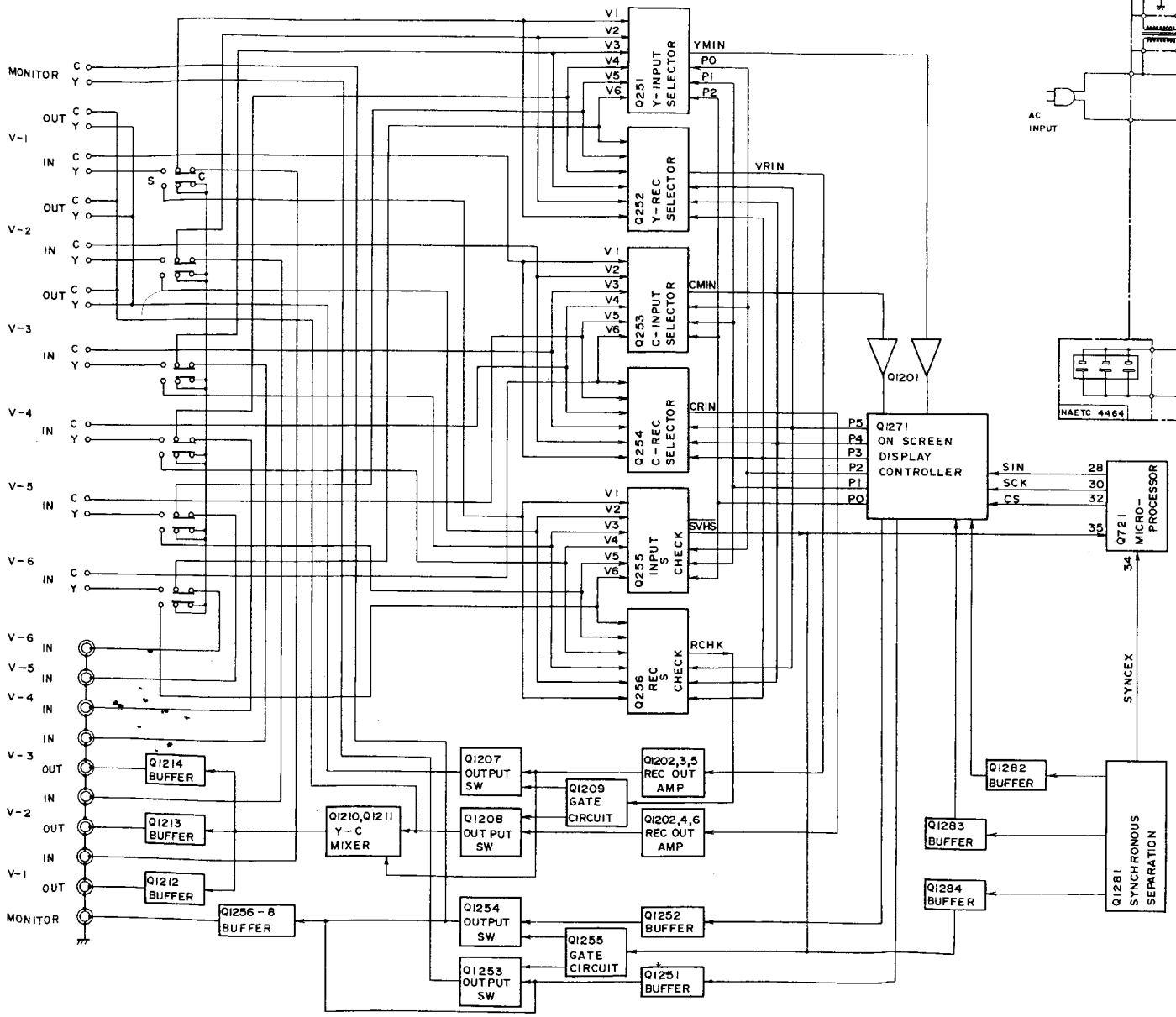

NAETC 4459
NAETC 4744
HEADPHONE
NAAF 4469
NAAF 4456
FRONT
NAETC 4457
MASTER VR
Q421 SELECTIVE TONE SW
Q431 MUTE SW
Q432
Q433
Q401a FRONT BALANCE
Q401b FRONT BALANCE
Q412
Q411
Q416
Q405 TONE CONTROL
FVTDA
FVTCL
FBTSTB
TCL
POWER AMP DRIVER
L-CH
R-CH
Q519,Q521 POWER AMP
Q520,Q522 POWER AMP
Q570,Q571 POWER AMP
Q572~Q574 UBNORMAL CURRENT DET
CENTER
Q422 SELECTIVE TONE SW
Q402a CENTER LEVEL
Q402b CENTER LEVEL
Q414
Q417
Q406 TONE CONTROL
CTVSTB
Q1441 VOLUME MOTOR CONTROL
M
Q1453 SELECTIVE TONE SW
Q435 MUTE SW
Q436 MUTE SW
Q437 MUTE SW
NAETC 4460
REAR
Q601 POWER AMP DRIVER
Q602 POWER AMP DRIVER
Q605,Q607 POWER AMP
Q609,Q610 UBNORMAL CURRENT DET
Q606,Q608 POWER AMP
Q403a REAR LEVEL
Q403b REAR LEVEL
Q413
Q415
Q1454 SELECTIVE TONE SW
NAAF 4461
NAAF 4462
Q632 POWER AMP DRIVER
Q631 POWER AMP DRIVER
Q636,0638 POWER AMP
Q639,0640 UBNORMAL CURRENT DET
Q635,0637 POWER AMP
FRONT ENHA MULTI SOURCE
Q404a FE/MS LEVEL/ BALANCE
Q404b FE/MS LEVEL / BALANCE
Q418
Q407 ANALOG SW
Q1431 GATE CIRCUIT
Q1432 GATE CIRCUIT
Q1455 GATE CIRCUIT
Q1451 SELECTIVE TONE SW
Q402c SELECTIVE TONE CONTROL
FCE
MAMUT
SIMUT
RVSTB
EVSTB
CTVSTB
FBTSTB
FCE
FVTCL
FVTDA
DOWN
UP
Q701 MASTER MICROPROCESSOR
Q702 REMOTE CONTROL DECODER
Q691,2 DC DET
Q693 GATE CIRCUIT
Q591 SPEAKER RELAY CONTROL
+22V
PROTECT
EN
LAT
FVTCL
FVTDA
RL504
RL501
RL502
RL503
RL507
RL508
RL505
RL506
RL509
RL510
FF
FR
C
FE L
FE R
RL
RR
FRONT PREOUT
CENTER PREOUT
MONOOUT
F. ENHANCE PRE OUT
REAR PREOUT
MAIN
CENTER
FRONT ENHANCE
REAR
REMOTE
FROM NAAR-4453
NAAR 4453

BLOCK DIAGRAM

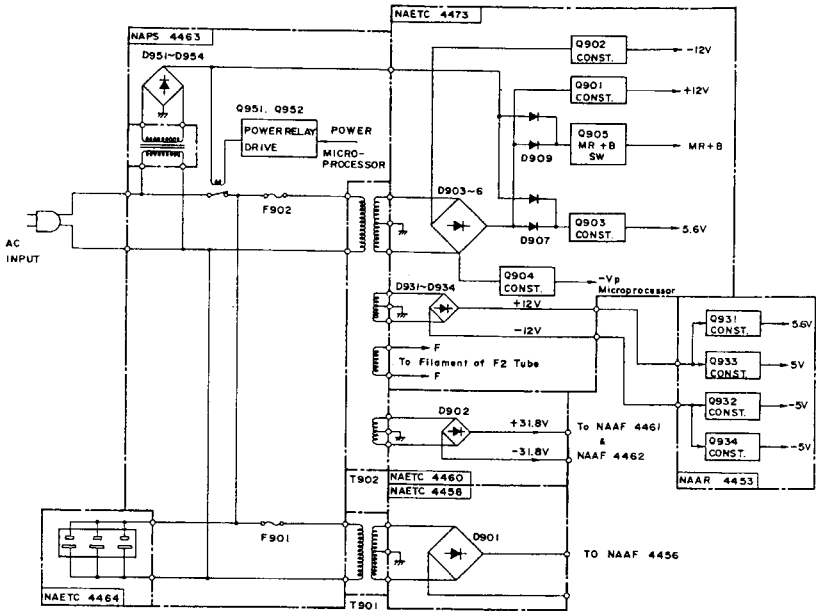
TUNER SECTION



VIDEO SECTION

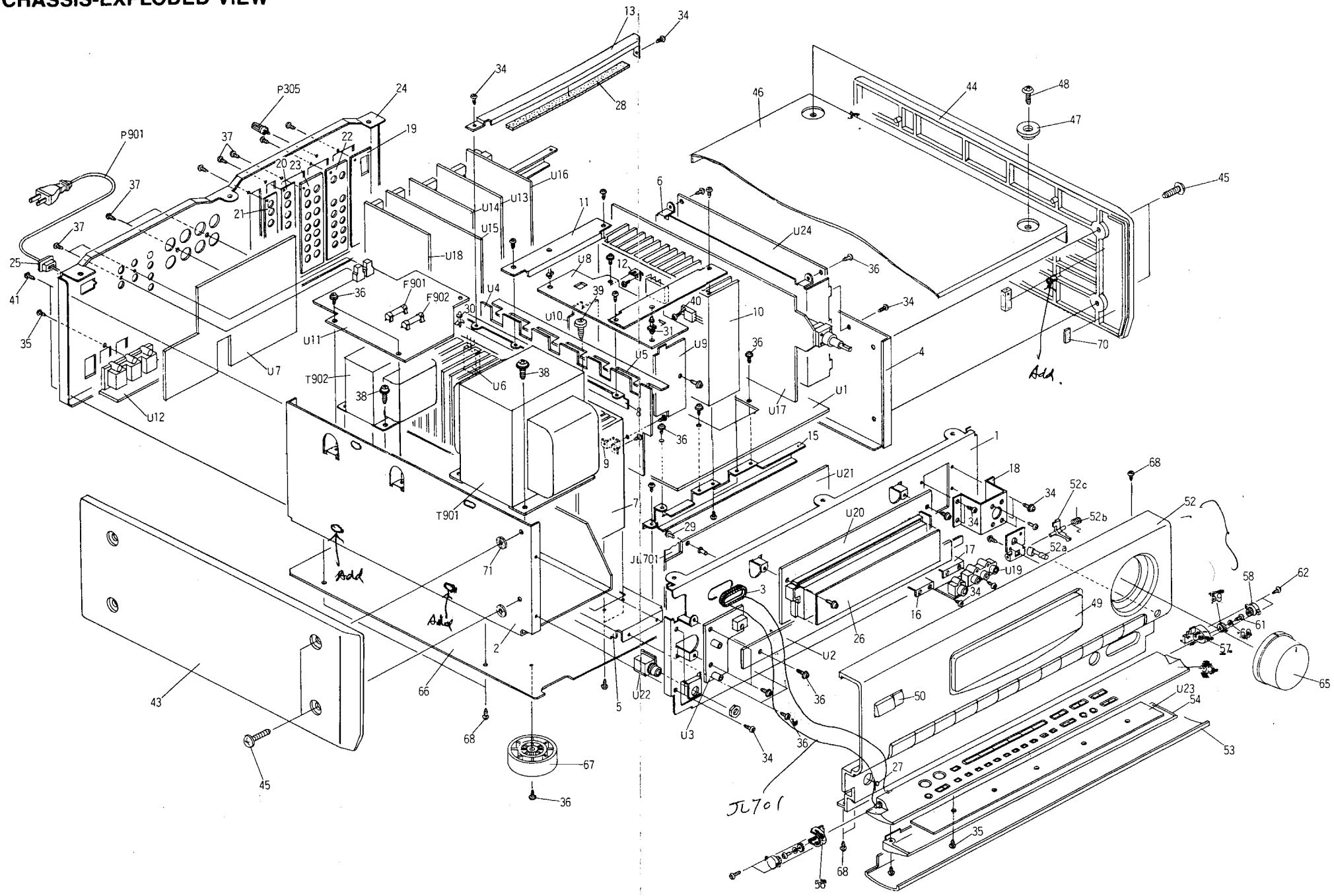


POWER SUPPLY SECTION



TX-SV909PRO TX-SV909PRO

CHASSIS-EXPLODED VIEW



PARTS LIST

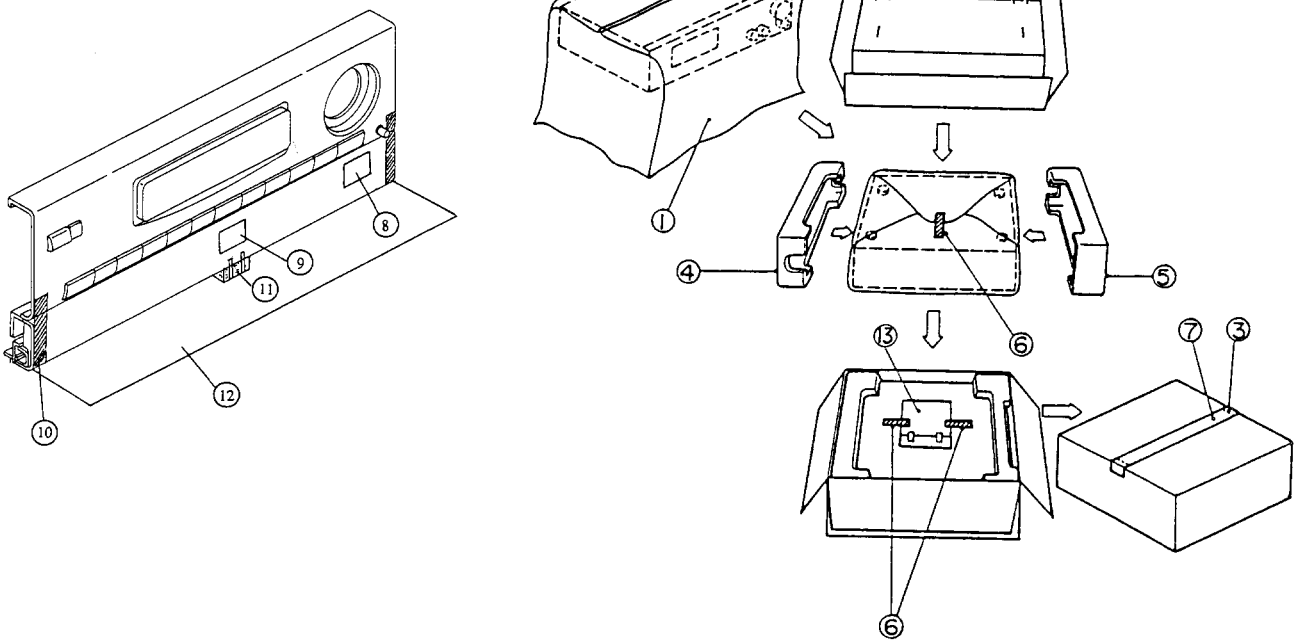
REF.NO.	PART NO.	DESCRIPTION
1	27110695A	Front bracket
2	27130685	Bracket,power transformer
3	28170030	Bushing
4	27115251B	Side bracket
5	27130686	Bracket H
6	27150333	Shield plate
7	27160307B	Radiator
8	27141527	Bracket HL-1
9	27141528	Bracket HL-2
10	27160308B	Radiator,sub
11	27141529A	Bracket HS-1
12	27141530A	Bracket HS-2
13	27141531	Bracket PU
14	27141532	Bracket PD-1
15	27141533	Bracket PD-2
16	27141534A	Bracket PN-1
17	27141535A	Bracket PN-2
18	27141536	Bracket,volume
19	27141537A	Bracket,antenna
20	27141538A	Bracket VD1
21	27141539B	Bracket VD2
22	27141540A	Bracket AD2
23	27141559	Bracket AD
24	27121576C	Back panel
25	27300750	⚠ Bushing,cord —
26	28133282	Back plate
27	28140860	t0.5× ϕ 4,Cushion
28	28141213	Cushion
29	880009	NRP-345,Plastic rivert
30	27190369	KGLS-22S,Holder
31	27190062	KGLS-12S,Holder
32	27190480	KGLS-8S,Holder
33	27190011	KGLS-6S,Holder
34	834430088	3TTS+8B(BC),Self-tapping screw
35	833430080	3TTP+8P(BC),Self-tapping screw
36	831130080	3TTW+8B,Self-tapping screw
37	834430108	3TTS+10B(BC),Self-tapping screw
38	830440089	4TTC+8C(BC),Self-tapping screw
39	838440109	4TTB+10C(BC),Self-tapping screw
40	801433	3SMS8W.SW+14B(BC),Sems self-tapping screw
41	801230	3STS+8BQ(BC),Self-tapping screw
42	831430088	3TTW+8B(BC),Self-tapping screw
43	28185381A	Side panel L
44	28185382A	Side panel R
45	837440169	4TTT+16C(BC),Self-tapping screw
46	28184515	Top cover
47	27265155A	Decoration ring
48	838440089	4TTB+8C(BC),Self-tapping screw
49	28191626	Clear plate
50	28191568	Clear plate RE
51	834430088	3TTS+8B(BC),Self-tapping screw
52	27215235B	Decoration frame
52a	28324596A	Knob B
52b	27180502A	Spring P
52c	28335038	Lever P
53	28148264B	Door
54	28324603A	Knob PD
55	28324599B	Knob ass'y,door
56	27301503A	Bearing L
57	27301504A	Bearing R
58	28400363	Damper
59	27301083	Gear,door
60	87642607	W2.6×7F(BC),Washer
61	833426060	2.6TTP+6P(BC),Self-tapping screw
62	833420108	2TTP+10B(BC),Self-tapping screw
63	833430080	3TTP+8P(BC),Self-tapping screw
64	835430082	3STF+8B(BC),Self-tapping screw
65	28324597	Knob ass'y,volume
66	27170288B	Bottom panel
67	27175251	Leg
68	834430088	3TTS+8B(BC),Self-tapping screw
69	27150346	Shield plate
70	28141212	4×55×2t,Cushion
71	28141210	Cushion
D901	22380044	RBV1506,Diode
D902	22380038	RBV602,Diode
F901	252053	⚠ 8A(ST-6),Primary fuse <D>
F902	252049	⚠ 4A(ST-6),Primary fuse <D>
F903	252077	⚠ 4A-SE-EAK,Primary fuse <G>
F904	252074	⚠ 2A-SE-EAK,Primary fuse <G>
JL701	2041142520	NCFC1-142520,Flat cable
JL701a	25050715	NSCT-14P519,Socket
P305	25060044	Ground terminal
P901	253146 or	⚠ AS-UC-6#18,
	253168	⚠ Power supply cord <D>
	253172	⚠ AS-CEE,Power supply cord <G>
Q519,Q520	2201482 or	2SC3281-R or
Q570	2201483	2SC3821-O,Transistors
Q521,Q522	2201472 or	2SA1302-R or
Q571	2201473	2SA1302-O,Transistors
Q605,Q606	2202063,	2SC4511-O,
Q635,Q636	2202064 or	2SC4451-Y or
	2202066	2SC4451-P,Transistors
Q607,Q608	2202053,	2SA1725-O,
Q637,Q638	2202054 or	2SA1725-Y or
	2202056	2SA1725-P,Transistors
T901	2300795	⚠ NPT-1143D,Power transformer <D>
	2300796	⚠ NPT-1143DG,Power transformer <G>
T902	2300799	⚠ NPT-1144D,Power transformer <D>
	2300800	⚠ NPT-1144DG,Power transformer <G>

REF.NO.	PART NO.	DESCRIPTION
U1	1A358553-1	NAAR-4453-1,Master microprocessor cirucit pc board ass'y <D>
	1A358553-1A	NAAR-4453-1A,Master microprocessor cirucit pc board ass'y <G>
U2	1A358554-1	NASW-4454-1,Selector switch pc board ass'y
U3	1A358555-1	NASW-4455-1,Remote control sensor pc board ass'y
U4	1A358556-1	NAAF-4456-1,Front and center power amplifier pc board ass'y
U5	1A358557-1	NAETC-4457-1,Power transistor pc board
U6	1A358558-1	NAETC-4458-1,Rectifier pc board
U7	1A358559-1	NAETC-4459-1,Speaker terminal pc board ass'y
U8	1A358560-1	NAETC-4460-1,Power supply circuit pc board ass'y
U9	1A358561-1	NAAF-4461-1,Rear power amplifier pc board ass'y
U10	1A358562-1	NAAF-4462-1,Front enhance and multi source power amplifier pc board ass'y
U11	1A358563-1	NAPS-4463-1,Power supply circuit pc board ass'y <D>
	1A358563-1A	NAPS-4463-1A,Power supply circuit pc board ass'y <G>
U12	1A358564-1	NAETC-4464-1,AC outlet pc board ass'y <D>
	1A358564-1A	NAETC-4464-1A,AC outlet pc board ass'y <G>
U13	1A358565-1	NAAF-4465-1,Selector circuit pc baord ass'y
U14	1A358566-1	NAAF-4466-1,Audio selector pc board ass'y
U15	1A358567-1	NAETC-4467-1,Video composite and display pc board ass'y
U16	1A358568-1	NARF-4468-1,Tuner circuit pc board ass'y <D>
	1A358568-1A	NARF-4468-1A,Tuner circuit pc board ass'y <G>
U17	1A358569-1	NAAF-4469-1,Balance and volume circuit pc board ass'y
U18	1A358570-1	NAETC-4470-1,Video selector pc board ass'y
U19	1A358571-1	NAETC-4471-1,Input terminal pc board ass'y
U20	1A358572-1	NADIS-4472-1,Display circuit pc board ass'y
U21	1A358573-1	NAETC-4473-1,Power supply circuit pc board ass'y
U22	1A358574-1	NAETC-4474-1,Hedphone terminal pc board ass'y
U23	1A358575-1	NASW-4475-1,Operation switch pc board ass'y
U24	1A358583-1	NADG-4483-1,DSP circuit pc board ass'y

NOTE: <D>:120V model only
<G>:220V model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
1	29100035A	1020×720,Styrene bag
2	29052404	Master carton box
3	282301	Sealing hook
4	29091571A	Pad R
5	29091570A	Pad L
6	261504	Adhesive tape
7	29110071-1	Damplon tape
8	29361430	Label
9	29361452	Label
10	29110069	Tape
11	28141211	Cushion
12	29095656	Protection sheet
	Accessary bag ass'y	
	29341728A	Instruction manual
	29100097	250×350,Styrene bag
	292064B	FM antenna
	232140	NMA-3057,AM loop antenna
	3010124	UM-4,Four batteries
	24140230	RC-230M,Remote control transmitter
	2010200	Connection cord RI
	25060123	YAE21-0120A,FM antenna adaptor
	29365019A	Warranty card <D>
	29358002J	Service station list <D>

NOTE: <D> : U.S.A. model only